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ABSTRACT

Conducted at a time when increasing numbers of the nation's young children are in child care and when the American public is concerned about children's readiness for school, the Cost, Quality, and Child Outcomes Study provides the first comprehensive econometric and psychometric analysis of child care and children's outcomes. The study was designed to examine the relationships among the costs of child care and the nature and effects of children's child care experiences. Cost and quality data were collected through visits to 50 non-profit and 50 for-profit centers in each of four states: California, Colorado, Connecticut, and North Carolina. Trained data collectors conducted interviews with and distributed questionnaires to center directors, teachers, and parents; they also observed two randomly chosen classrooms in each center. Data were then collected on 826 children from preschool classrooms visited earlier. The study found that while child care varies widely within and between states and sectors of this industry, most child care is mediocre in quality, sufficiently poor to interfere with children's emotional and intellectual development. Market forces constrain the cost of child care and at the same time depress the quality of care provided to children. It costs somewhat more to provide good quality care than to produce poor quality care; however, higher costs are not obviously reflected in parent fees, which are relatively similar in centers of different quality. Based on the findings, the following recommendations were made: (1) launch efforts to educate parents on identifying high quality programs; (2) implement higher state standards; (3) increase investments in child care staff; and (4) assure adequate financing and support of child care. (BGC)

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COST, QUALITY AND CHILD OUTCOMES IN CHILD CARE CENTERS

EDITED BY SUZANNE W. HELBURN

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TECHNICAL REPORT

JUNE 1995

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Cost, Quality, and Child Outcomes in Child Care Centers

Technical Report

June, 1995

Suzanne W. Helburn, Editor

The Cost, Quality, and Child Outcomes Study was conducted and written by:

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This technical report is the result of a team effort. The team as whole participated in decision making at every step of the research and writing effort. This makes chapter authorship difficult to ascribe in full. The first author in each chapter was usually responsible for the major research reported and the writing of the chapter. Sometimes, the second author was equally responsible. In addition, chapter authorship lists the most important other contributors to each chapter.

Special intellectual contributions need to be noted which cannot be reflected in authorship of individual chapters. To some extent these are related to the history of the project. First, we wish to acknowledge Mary Culkin's research which enabled us to study the effects of administrators' leadership on quality of services. There is no separate chapter on this work; rather, results related to the effect of leadership are integrated into relevant chapters, particularly Chapters 4 and 13. Second, we wish to acknowledge Donna Bryant's leadership in the early stages of the child outcomes portion of the project.

The staff and others who participated in this phase of the study are identified at the back of this report. We want to thank them all and their predecessors for their enormous support over the last seven years of developing and conducting this study. To any we have missed enumerating, we apologize. We especially want to thank Carol Tagstrom for her continuing support. Her organizational skills, attention to detail in completing all tasks, and good humor have been essential to the quality of our work. We are particularly indebted to her for her leadership in designing and producing this report.

The technical advisors team was also involved at most stages of the research design and writing, and we thank them for their contributions. We also appreciate the support we received in numerous ways from our respective universities and departments. The staff at the contributing foundations were also extremely helpful in both the formative and conduct stages of the study.

Our thanks also go to the directors, administrators, teachers and parents who graciously gave their time to this study; to the teachers who let us into their classrooms; to the parents who agreed to have their children participate; and, of course to the children themselves. Without all of their help, this study would not have been possible.

Despite all the help along the way, the opinions in this report are those of the Cost, Quality and Outcomes Team and do not necessarily reflect the views of any of the funding foundations, advisors, consultants or other participants in the study.

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Summary

Every day, five million American children attend child care. As child care has become essential to our nation's children and their families, fresh, clear knowledge about child care quality, costs, and child outcomes is increasingly necessary.

To that end, *Cost, Quality, and Child Outcomes in Child Care Centers* provides a comprehensive study of center child care in four regions of California, Colorado, Connecticut, and North Carolina. Researchers from the University of Colorado at Denver, the University of California at Los Angeles, the University of North Carolina at Chapel Hill, and Yale University collected and analyzed data during 1993 and 1994. In total, data were collected from 401 centers and 826 preschool-aged children from a subsample of these centers.

The research was deliberately designed to provide an intensive, on-site study of centers in four fairly representative states with varying licensing standards and demographic and economic characteristics. Taken together, our results give a national overview. Individually, the results for a given state are representative of other states with similar characteristics.

FINDINGS

THE QUALITY OF SERVICES

- Child care at most centers in the United States is poor to mediocre, with almost half of the infant and toddler rooms providing poor quality.

- Only one in seven centers provides a level of quality that promotes healthy development. Child care in one in eight centers threatens health and safety. Seven in ten centers are providing mediocre care which may compromise children's ability to enter school ready to learn. Infants and toddlers fare worse. Forty percent of the infant and toddler rooms were observed to endanger childrens' health and safety. Only one in 12 infant/toddler rooms are providing developmentally appropriate care.

- The quality of child care is primarily related to higher staff-to-child ratios, staff education, teacher turnover, administrators' experience, and their effectiveness in curriculum planning. In addition, teachers' wages, their education and specialized training were the most important characteristics that discriminate among poor, mediocre, and good-quality centers.

- States in this study with more demanding licensing standards have fewer poor-quality centers. Centers that comply with additional standards beyond those required for basic licensing (such as those required for funding or accreditation) provide higher quality services.

- Centers with extra resources used them to improve quality.

CHILD OUTCOMES AND THEIR RELATION TO CENTER QUALITY

- Children's concurrent cognitive and social development are positively related to the quality of their child care experience. Compared to children in lower quality settings, children in higher quality classrooms displayed more advanced language development and pre-math skills, had more advanced social skills, had more positive attitudes toward their child care experiences, and had warmer relationships with their teachers.

- The quality of child care is positively associated with developmental outcomes for children across all levels of the mother's education. In some cases child care quality was even more strongly related to the outcomes of children at risk.

COST, REVENUE AND SUPPORT

- Center child care - even mediocre care - is costly to provide. Donations - including goods, space, volunteer hours, and foregone wages of workers - account for more than one-fourth of the full cost of care.

- Good-quality services cost more than mediocre-quality services, but not a lot more.

- Center enrollment affects costs. Cost per child hour decreases with the increase in total child hours provided and with more intensive use of the existing space. Also, there are economies of scale for larger centers.

- Cash payments from government and philanthropic sources represent about 28% of center revenue, with the remainder coming from parent fees.

SECTOR COMPARISONS

- While there are differences between nonprofit and for-profit centers, their overall quality is not significantly different, except in the one state with low licensing standards.

- Auspices mainly dependent on parent fees for revenue - church affiliated and for-profit centers - tend to provide lower quality.

- Within each sector, particularly in the nonprofit sector, there are variations by sub-sector in center characteristics and overall quality.

- These findings suggest that it is difficult to associate any given level of quality with sector overall; rather, levels of quality may be more clearly aligned with sub-sectors.

- On average, both nonprofit and for-profit centers seem equally efficient in their allocation of resources in the sense that the variable cost per child hour is not significantly different for centers with similar enrollment and quality.

THE COMPETITIVE ENVIRONMENT

- Characteristics of the market - competition and subsidy dependence - affect center finances, with nonprofit and for-profit centers facing different competitive conditions that affect their performance.

- Parents are not, in general, good monitors of quality. Although parents report that they value good-quality care, they substantially overestimate the quality of care their children are receiving. This lack of consumer knowledge and the fact that there is little difference in fees in centers providing high- and low-quality care suggest that there is little financial incentive for centers to improve quality.

RECOMMENDATIONS

The main recommendation of the study is that the country must commit to improving both the quality of child care services and access to good-quality child care programs. The study identifies key initiatives that will be necessary to improve child care quality:

- A public education media campaign should be launched to inform consumers and the general public of the liability of poor-quality programs;

- Parents need to have better tools to identify good quality child care;

- States should implement higher quality child care standards and improve monitoring of programs;

- The nation needs to increase its investment in child care staff;

- Government, business and private philanthropies need to increase their investments to help families pay for the cost of good-quality child care, and those investments need to be tied to incentives to increase quality.

Part 1

Chapter 1

Introduction

More and more women, many with small children, are being drawn into the paid labor force, some for the satisfactions of working outside the home, many from economic necessity. The number of child care facilities has increased to meet the demand. In 1990, half of all four-year-olds and 27% of all three-year-olds in the United States were enrolled in some kind of early childhood program. Center care represents an increasing share of out-of-home child care, particularly for preschool children. In a recent study, close to half of employed mothers and one third of unemployed mothers of three and four year olds reported center care as their main child care arrangement. (Willer, Hofferth, Kisker, Hawkins, Farquhar, & Glantz, 1991).

The increasing importance of nonparental child care was recognized by the federal government in 1990 with the passage of the Child Care and Development Block Grant and the expansion of financial relief to parents through federal child care tax credits. Expansion both in funding and in the mission of Head Start programs illustrate our commitment as a nation to the importance of providing youngsters with the preschool stimulation they need to enter primary school ready to learn.

While these programs begin to address issues related to the provision of child care for the nation's young, we have a long way to go. Unlike other advanced industrialized nations, we have no comprehensive child care system in the United States nor have we created a general family policy framework to address the increasingly complex changes confronting young parents and their children. There is no agreement on the relative roles of federal, state and local government, not even on the relative financial responsibility of government vs. family vs. philanthropy in the child care arena. Yet we are inventing a new system of services for families with young children that must meet a wide range of needs.

The results of this study come at a propitious time. At the federal level new ways of thinking about relative priorities in spending and administration of public sector funding are being considered. An air of experimentation is being promoted to give states more flexibility in designing safety nets in our social programs. At the state level, new initiatives in North Carolina, Colorado, Ohio, and a number of other states illustrate the pressure felt by state legislators and governors to address the serious concerns about the well being of young families. While little is known about what is happening at the local government level, the interface between state and local governments is where many of the most important policy decisions will be made.

As with industry across the board in this country, there is a dual focus on improving quality while at the same time improving efficiency. In particular, child care providers are faced with increasing fees to families who struggle to meet the already high cost of services. At the same time there is widespread concern about the quality of care and its impact on children. .

This study was designed to provide critically important information to help policy makers - both public and private - come to grips with the often conflicting decisions facing them. It was funded by a group of forward looking foundations, intent on helping our country make the difficult decisions needed in the face of rapid change in family structure, the role of women in the work force, and child rearing practices.

Because the economics of the child care industry is not well understood, this study combined the expertise of child development professionals in measuring quality with the skills of economists in measuring cost. The analysis of these data provides insights into the dynamics of the market that inhibit centers from providing better care. It compares the performance of both for-profit and nonprofit centers. It describes a competitive industry with low profit margins and with little financial incentive to improve quality. In explaining why the quality of most care is inadequate, it points to ways in which investment can improve the developmental outcomes of young children to help ensure their ability to begin school ready to learn.

This study focuses on the relationship between the cost and quality of child care in centers providing full-time services, as well as the effect of center quality on children's developmental outcomes. It is based on a study of 401 child care centers during the spring of 1993 and a sample of 826 preschool children who attended these centers. Approximately 100 centers were studied in each of the following locations: Los Angeles County, California; the Front Range region of Colorado (Colorado Springs, Denver, Fort Collins); the Hartford-New Haven corridor in Connecticut; and the Piedmont Triad area in North Carolina (Greensboro, Winston Salem, and High Point).

The questions addressed by the study include:

- What is the relation between cost and quality of center child care?

- How is the quality of a child's child care center environment related to his or her cognitive, language, and social skills?

- Are there differences in the strength of the relationship between child care quality and children's outcomes for children from different backgrounds?

- What can we learn about the relative importance of staffing ratio, group size, qualifications of staff, staff turnover, and quality of administration and leadership on the overall quality of services?

- How do licensing standards and regulations affect cost, quality, and service delivery?

- How do changes in wages of different categories of staff affect center decisions about the mix of staff to employ?

- What are the differences in practices between for-profit and nonprofit centers, and how do they affect center costs and quality of services?

- Can larger or more intensively used centers provide the same quality services at a lower cost than smaller or less intensively used centers?

- What are the economic advantages and disadvantages to centers in providing services to all age groups of children versus only one or two age-groups? In economic terms, is there a most efficient mix of age-groups and enrollment size?

- Which types of centers perform most efficiently in terms of the cost of providing services of a specific level of quality?

- How effective are parents in monitoring the quality of care?

- What public policies are suggested by these findings?

THE IMPORTANCE OF THE STUDY

Child care, and more generally early care and education (ECE), serves at least two different functions: (1) freeing parents, primarily mothers, to enter the paid labor force, and (2) fostering the physical, emotional, cognitive, and social development of children. This study finds that the second function is not well met, falling far below a satisfactory level. Each function is addressed below.

The growing public concern about the availability of affordable out-of-home child care is a response to profound structural changes in society in the United States that have accompanied the dramatic movement of women into the paid labor force. In 1993, 59% of all women with children under the age of six were in the work force (*Statistical Abstract of the United States*, 1994, p. 402), representing a five-fold increase from 11% in 1947-48 (Ford Foundation, 1989). It now is the norm for mothers of young children to work at least part-time. The changes involve new patterns of family life in which parents are sharing the responsibility for raising their children with paid providers. Increasingly these services are becoming a market commodity bought and sold more or less according to principles of market supply and demand.

Public concern about the effect of ECE services in fostering the healthy development of children has centered on children considered at risk for successful transition to school. The combined effects of increasing labor force participation of women, destabilized marital relations, discrimination against women in the labor market, and the declining real value of Aid to Families with Dependent Children (AFDC) and Food Stamp grants have contributed to the feminization of poverty. This means that an increasing percentage of the poor are made up of single mothers and their children. In 1993, about 40% of poor people nationwide were children under the age of 18, whereas children made up only 26% of the population as a whole; 15 million, or 22% of children under 18 lived in families with incomes below the poverty line; the poverty rate for African-American children living in single-parent families was 87% and was 46% for Latino children (Ibid,pp.32,476).

The Carnegie Corporation report, *Starting Points: Meeting the Needs of Our Youngest Children*, describes "the quiet crisis" in the lives of young children and their families which threatens their future and the nation's (Carnegie Corporation of New York, 1994). The report describes the deprivation suffered by at least 3 million children in this country under three years old, and the deteriorating quality of these young lives. It documents the importance of early stimulation to the development of children's brain structure, ability to learn, and moral reasoning. It argues, however, that the current fragmented ECE institutional arrangements cannot guarantee the quality of services necessary for children's healthy development.

PROVIDING GOOD-QUALITY CHILD CARE

Studies show that much of the ECE care children receive in centers and in family child care does not promote their cognitive, social, and physical development (Whitebook, Howes & Phillips, 1989; Galinsky, Howes, Kontos, & Shinn, 1994; Clifford, Russell, Fleming, Piesner, Harms, & Cryer, 1989; Cryer, Clifford, & Harms, 1988; Kisker, Hofferth, Phillips, & Farguhar, 1991). Nevertheless, there is considerable evidence from previous research that good-quality ECE can make a difference in the developmental outcomes of children. It has been used successfully to prepare "at-risk" children for entry into school. Compared with children in poor-quality ECE programs, children from low-income families who attended high-quality programs have higher IQs during early childhood (Burchinal, Lee, & Ramey, 1989; Lazar, Darlington, Murray, Royce, & Snipper, 1982), middle childhood, and through adolescence (Campbell & Ramey, 1994), better academic outcomes (Campbell & Ramey, 1994; Hayes, Palmer, & Zaslow, 1990; Lazar et al., 1982), and become more productive citizens as adults (Berrueta-Clement, Schweinhart, Barnett, & Weikart, 1984). Furthermore, there is evidence that children from both middle-income and low-income families who attend good-quality centers have better social and intellectual development (Doherty, 1991).

These studies justify assertions about the importance of good-quality of ECE for all children. However, they cannot do more than hint at possible long-run effects of current changes in child rearing patterns on our society as a whole. At a time when the public is becoming increasingly alarmed about the environmental hazards attendant to our way of life, it seems prudent to take seriously the potential hazards to social life of major changes in work and family structure.

A new emphasis on encouraging the provision of good-quality care has received some empirical justification from recent research which indicates that ECE markets have met the increasing demand, but possibly have done so through the provision of lower quality services. There is not much evidence of excess demand (or inadequate supply) except in certain geographic locations, for infants and toddlers, and for families with special needs such as care at odd hours and sick care (Hofferth, 1991; Culkin, Helburn, Morris, & Watson, 1990). For instance, recent evidence indicates that fees of centers have not increased much in real terms since 1975. It is possible that demand is not outstripping supply of services (Willer, Hofferth, Kisker, Divine-Hawkins, Farquhar, & Glantz, 1991). However, the quality of services may have declined somewhat in recent years (Whitebook, Howes, & Phillips, 1990). This suggests that the increased demand may have induced entry of low-quality providers, and that the stable prices hide higher prices per level of quality, but lower overall quality (Walker, 1991). Parents may be finding it increasingly difficult to find good-quality services that they can afford.

FINANCING GOOD QUALITY CHILD CARE

The growing recognition of the need for good-quality ECE programs raises questions about their cost. Understandably, the debate is shifting to discussions of the relationship of cost of producing services and the quality of services. This involves learning more about how good-quality child care can be produced efficiently and about trade-offs between quality and cost. These discussions will require a clear understanding of the actual production cost and the quality currently available.

In particular, it is important to understand how effectively competition works in these markets. Unlike most other developed nations, the U.S. has relatively open markets in the child care arena. There does not seem to be any reasonable likelihood of creating a public system of child care. And yet, the government, through both direct outlays and through indirect tax incentives, plays a major role in these markets. Thus, it is essential that public policy debates recognize these connections and include discussion of the effects of alternative policies on industry performance.

Current initiatives to reform the welfare system (AFDC) add urgency to the need to understand the structure and performance of child care markets. Initiatives to require AFDC mothers to enter the labor force depend on providing child care while the mother enrolls in training programs and during the transition to steady labor force participation and true self-sufficiency. Such policies should increase the demand for child care. However, if the primary goal is to increase the mothers' labor force participation, low-cost, low-quality child care alternatives might be encouraged, counteracting efforts to improve the quality of early care and education for at-risk children. In fact, such policies could be the cause of poorer outcomes for this wave of high-risk children. Data on the need for and cost of good-quality ECE services must be brought into the welfare reform debate in order to ensure that publicly funded child care programs do not work at cross purposes.

Early care and education is regulated at the state level and is provided by a heterogeneous group of individuals and institutions: relatives, family child care providers, for-profit and nonprofit centers, public and private programs. There is considerable variation in cost and quality of services between and within states and markets. Creating an effective, good-quality system for all children will require serious collaboration among all groups in the ECE community and other interested parties, as well as the determination to move forward within the industry and among various interested constituencies for the good of children and their families. Highly complex issues will need to be resolved. This report begins to provide the information which will aid this process of accommodation.

RESEARCH NEEDS ON THE COST AND QUALITY OF CHILD CARE

Recent research has identified quality characteristics that are essential in early care and education provision (Hayes et al., 1990) and there is a growing child development literature on the quality of care (Whitebook et al., 1990; Phillips, 1987; Kisker, Hofferth, Phillips, & Farguhar, 1991). However, we know relatively little about the interaction between quality and costs of care, particularly with respect to differences between types of providers. There is some evidence that nonprofit centers provide higher quality care at higher cost as compared to centers run for profit (Kagan & Newton, 1989; Kagan, 1991; Whitebook et al., 1989; Mukerjee, Witte, & Hollowell, 1990). In a study of 100 centers in Los Angeles, Olenick (1986) found that higher quality programs were associated with higher costs of production and that higher quality was associated with an increasing proportion of total costs devoted to staff salaries and benefits (see also Phillips, Mekos, Scarr, McCartney, & Abbott-Shin, 1994). However, because these earlier studies did not collect complete financial data, they provide only gross indicators of the relation between cost and quality.

Recent reviews of the economics literature on child care markets reveal that little is known about cost functions in the industry: the explicit relationship between types of inputs and costs, the effects of substitution between inputs on cost and quality, the extent of economies of scale (effect of size on costs and quality), how much additional cost is associated with better care, and differences in the relation of costs to quality at various kinds of centers (Magenheim, 1990a; Blau, 1991). Only three studies have estimated empirical cost functions (Mukerjee & Witte, 1993; Preston, 1993; Powell & Cosgrove, 1992). There are no studies which permit analysis of the relation between the production of quality and amounts and qualities of inputs (Blau, 1991). Blau attributes this to a lack of suitable data. This study fills an important gap by creating such a data set and providing findings on the relation between the cost and quality of ECE center services. It helps explain the effects of competition on the delivery of early care and education services. Because this study will more fully account for the interaction between financial and program dimensions in diverse settings, it provides new insight about the performance of the industry.

ORGANIZATION OF THIS REPORT

The analytic plan of this report is described at the end of chapter 2. Briefly, Part 1 provides a theoretical background for discussing report results and describes the study design. Part 2 reports the descriptive comparisons of centers by state, profit sector, percent of subsidized children served, percent of infant/toddlers enrolled, and existence of a school-aged program. Comparisons within sector by auspice are also reported in this Part. Part 3 reports the inferential results: estimates of quality-adjusted cost functions, of determinants of quality, and of the concurrent relationship between children's developmental outcomes and the quality of their child care setting. Part 4 summarizes major findings and presents policy recommendations.

Chapter 2

The Cost, Quality, and Outcomes Study Theoretical Structure

by SUZANNE W. HELBURN, MARY L. CULKIN, JOHN R. MORRIS, & RICHARD M. CLIFFORD

OVERVIEW

This chapter provides the theoretical perspective underlying the study research. The first section gives insights from economic theory relevant to understanding the early care and education (ECE) industry structure and competitive environment. It provides the framework for the economics research accomplished in the study, and for discussing public policy implications of the study results. The second section discusses the concept of quality ECE services and introduces a conceptual structure of the process of producing quality services and of the linkage between this process and children's development. The third section outlines the report analytic plan and presentation of results.

THE CHILD CARE MARKET

Child care markets are mixed markets of for-profit, private nonprofit, and public centers providing a differentiated set of services. Results of this and previous studies document the inadequate supply of good-quality ECE services; therefore, this section focuses on potential sources of market inefficiencies or imperfections that could raise costs and/or lower quality.

THE MOVEMENT OF ECE FROM HOME TO MARKET PROVISION

Child care is a relatively young, growing, competitive, and dynamic industry. Although "day care" centers and family homes, nursery schools and preschools, governesses and nannies have all been around a long time, established markets providing these services have only been developing in the last thirty years as a result of the increased labor force participation of young mothers. There are differing estimates of changes in the use of ECE centers in the last thirty years, but all show consistent growth rates through 1990. According to the National Child Care Survey (1990), use of center-based care between 1965 and 1990 expanded continually. Among families in which the mother worked outside the home, in 1990 30% of preschool aged children were in center-based care as their primary arrangement, compared to only 5% in 1965. Coelen, Glantz, & Calore (1979) estimated that 900,000 three- to thirteen-year-old children were in centers in 1977. By 1990, Willer and colleagues report that four to five million children under the age of thirteen were enrolled in ECE centers (Willer et al., 1991, pp. 16-17). Using the Survey of Income and Program Participation (SIPP) data, U. S. Department of Commerce researchers estimate that for children under five of employed mothers, the percent of primary child care arrangements provided by organized child care facilities rose from 13% to 27.5% between 1977 and 1990 (Casper, Hawkins & O'Connell, 1994).

Not only is this industry growing rapidly, it also appears to be highly competitive. And, typical of a new industry, the competitive relations have not settled into an established pattern. There is continual movement in and out of the market by centers and, especially, by family providers. This instability has consequences for both the suppliers of services and the children and families they serve. Centers and family child care providers face the prospect of low and uncertain income in ECE. Children face the possibility of moving from one provider to another, which can be traumatic for them and can adversely affect their development.

ECE services are in the process of being *commodified*. That is, early care and education services are moving from home to market provision. Child rearing is one of many kinds of home or farm production of goods and services for one's own family which, in this century, has been increasingly supplanted by market production. Part of the dynamic of capitalist development is the tendency for market production to take the place of home production. This, in turn, involves increasing pressures on and opportunities for women to move from home to market work, from unpaid to paid labor. The growth of the ECE industry is part of the same process that has brought about greater female labor force participation, particularly among young mothers.

Increasingly, ECE services are being bought and sold instead of being supplied just at home outside the market system. In fact, they are being supplied by some of the women who formerly would have provided them only for their own family.

MARKET SUPPLY

The ECE market is a local market made up of a heterogeneous group of providers - from the children's own parent(s), to nannies in the child's home, to family child care providers, to an array of public, private nonprofit, or for-profit child care centers, including nationally organized systems of centers. In addition, public schools are expanding services, particularly for school-aged children, and for at-risk children in the year or two before normal school entry. Part- and full-day Head Start and state-financed preschool programs for at-risk children add to the diversity of programs and complexity of the market.

Child care services are bought and sold in local markets, that is, markets where suppliers compete for clients within a relatively small geographic region like a small city or a section of a large city. Child care providers compete in local markets, because services must be conveniently located for parents - often somewhere within the commute from home to work. This is true despite the increasing importance of national systems of centers. These systems have centers located in many states throughout the United States, but each center in the system competes for customers in a relatively small radius of its own location.

ECE as a Monopolistically Competitive Market

ECE markets seem to be characterized by what economists call *monopolistic competition* (Maggenheim, 1990b). On the one hand, they are highly competitive - that is, there are a lot of providers competing with each other within the local market area, and competition also exists between centers and alternative kinds of child care, for instance, family day care. They are also competitive because, similar to other local service industries like the restaurant, retail store, and hair salon businesses, ECE centers are relatively easy and inexpensive to open, particularly if started on a small scale. For instance, in Colorado, it costs from $400,000 to $600,000 to purchase and outfit a building for fifty to sixty children (based on information supplied by the Colorado Office of Resource and Referral Agencies). The start-up costs are much less when the center uses rented space and is organized to serve fewer children. In the case of unlicensed family child care providers, there may be no actual start-up costs, for instance in the case of unlicensed providers who take care of a few neighbor children for pay.

On the other hand, ECE markets are monopolistic in the sense that each provider has a tiny bit of monopoly power. Despite the highly competitive nature of the market, no two providers supply exactly the same services. That is, there is *product differentiation*. ECE is a personal service industry, so that the unique personal characteristics of center staff members affect the types and quality of services. Also, the ECE services provided are complex and can vary in the number of different services provided, as well as in the emphasis on and attention given to different aspects of the package of services. Furthermore, because location is important to parents, the unique site of a given provider may be an advantage. For these and other reasons, each provider has a little discretion in setting fees, and some control in determining the nature of services provided.

There are at least three important effects of monopolistically competitive market conditions. First, as stated above, because of the uniqueness of their services and customer loyalty, businesses have a little discretion in the price they can charge. However, they must by and large conform to the going prices because price competition is prevalent, and this competition tends to force prices down. This creates the second consequence: such businesses tend to earn a low rate of return on investment (even when the main investment has been the provider's own education). Third, economic theory predicts that under these competitive conditions there are so many suppliers of services that there is excess capacity. In child care, this would mean that some providers would have vacancies which would raise their cost per child above what it would be if all places were filled. While this might not be true of centers serving a specific clientele or centers with a good reputation, it should be the case for many centers located in areas where there is strong competition. The tiny bit of monopoly power and the low cost of going into business mean that there can be too many centers to permit all of them to operate continually at full capacity. This creates a constant competitive pressure on existing centers.

Quality of Services as a Source of Product Differentiation

As pointed out above, an important characteristic of monopolistic competition is product or service differentiation. For purposes of this study, the most important type of variation in ECE services is quality differentiation. Traditionally, a common quality distinction has been made between "care" and "education." This distinction is important because of the differences implied in the professional training required to provide the services. Nurturing children in one's care, keeping them safe, clean, and well-fed are important care-giving services which may not necessarily require a lot of specialized training. However, services emphasizing education do. Engaging children in activities which promote their cognitive, social, motor, emotional, and moral development are educational services which involve careful planning and attention to individual children's needs. Since good-quality ECE services must create an effective learning environment, successful programs must always have an educational component. Thus, the cost of ECE services should be affected by the way care and education are combined in an ECE program. All providers give both care and education, but they differ in emphasis, in the degree of articulation, the quality of the two aspects of services and, therefore, the educational and experience requirements of the staff.

The ECE profession has formed a consensus definition of quality which includes high-quality care integrated into a developmentally appropriate education program for children of different ages (Bredekamp, 1986). ECE programs can be differentiated by the level of quality based on the profession's definition, for instance, as interpreted in the Early Childhood Environment Rating Scale (ECERS) (Harms and Clifford, 1980).

At the heart of the conflict over affordable versus good-quality ECE services is the extent to which society as a whole considers it appropriate to supply just "care," which is cheaper to produce, to parents who cannot afford or do not value "education" as part of the package of services they are purchasing.

To repeat, the level of quality of ECE is an important form of product differentiation in the field, and good-quality care is hard to achieve. The chilling fact is that good-quality centers and family child care programs as defined by the ECE profession are not the norm; they are not even common among programs with high fees. According to recent studies, most providers are not offering good-quality programs in the United States (Whitebook, Howes, & Phillips, 1989; Scarr, Eisenberg, & Deater-Deckard, 1994; Galinsky, et al., 1994).

ECE as A Mixed, and Segmented, Market

The ECE market is often referred to as a *mixed industry*, because the services are supplied by establishments with different structures of ownership. Centers can be private for-profit, private nonprofit, or public establishments. Furthermore, they can be mixtures of these categories; for instance, for-profit center systems can include some centers which are legal nonprofit centers. Finally, self-employed family child care providers operate small businesses. Weisbrod (1988) and Salamon (1992) refer to these markets as mixed industries.

Ownership structure is important because it can affect the objectives to be satisfied by the organization. Economists assume that for-profit establishments are organized to maximize profits while nonprofit establishments do not have to make a profit and are usually created for other purposes. Thus, they reason that the existence of different kinds of ownership structure organized around different objectives, subject to different kinds of legal and other constraints will necessarily affect competition and market performance.

However, it is not so clear that these sectoral differences in objectives are very strong in the center child care market. In a recent study comparing the operating objectives and characteristics of for-profit and nonprofit centers in the Pacific Northwest, directors from both sectors ranked profit maximization low, and ranked nonfinancial objectives such as satisfying developmental needs of children most highly (Fletcher, Gordon, Nunamaker, & Richarz, 1994). Differences in motivation between the two sectors were small, suggesting that centers operating in both sectors are capable of altruistic behavior.

Not only are ECE markets mixed, some economists argue that the market is ***segmented***, that is, there are several submarkets, each with different types of producers serving different clientele (Kagan & Newton, 1989; Kushman, 1979; Rose-Ackerman, 1986). They argue that, for instance, publicly owned centers such as in public schools may be designed to serve at-risk children in their service area or provide services for children in their school requiring before- and after-school care. Tax-exempt nonprofit centers tend to be designed and managed by persons with altruistic tendencies to satisfy any of a range of objectives, for instance, providing good-quality services, or affordable services to a particular clientele. For-profit centers serve a wide range of middle income families - working-class, salaried employees, and professionals. As they are a business which must earn a profit, they provide the services demanded by their clientele. To the extent that this hypothesis is true, competition between these sectors is reduced because the centers are not competing for the same customers. Also, the hypothesis suggests that there are sectoral differences in quality of services, which would affect consumers of care differentially.

The industry is also segmented into center and home-based services. Many parents have the option of providing care themselves; thus, they are both potential buyers and suppliers. Family child care - licensed, legally exempt, or illegally operating - is another option which is preferred by some parents. Even though family child care represents a large fraction of out-of-home care, A Profile of Child Care Settings indicates that center care is growing both absolutely and relative to family child care (reported in Willer, Hofferth, Kisker, Divine-Hawkins, Farquhar, & Glantz, 1991, pp. 43-45).

Family child care options increase the competitive pressure on fees. Hofferth (1987) reports that studies have consistently shown center care to be more expensive than family child care. Lower family child care fees may be due to lower costs. In addition, they may reflect the preferences of some family care providers. Walker presents evidence that some family child care providers, particularly unlicensed providers, choose to supply services in order to be with their own children. Therefore, he argues that they may be more like utility maximizers (they are more like consumers maximizing their own pleasure) than small proprietors maximizing profits (Walker, 1991, p. 63). A recent study indicates that the mean number of children served per family child care provider is small, 3.3, and that a large percentage of those studied became providers in order to stay at home with their own children (49%) (Galinsky, Howes, Kontos, & Shinn, 1994). This can help explain, in part, the willingness of some family providers to charge lower fees for services.

ECE as a Regulated Market

An extremely important aspect of the supply of ECE services is the regulatory environment existing within the local market. ECE services are differentially regulated at the state level. All states regulate centers, and virtually all states regulate family child care. Centers must be licensed to operate, and most state licensing requires conforming to rules related to minimum square footage per child, safety precautions of facilities, sanitation standards, screening of personnel for criminal records, staffing ratios, group size, staff training and staff experience. In addition to state licensing regulations, counties and municipalities often impose requirements (Gormley, 1990). Although there is no overall federal regulation of ECE services, programs on military bases, and programs like Head Start come under federal regulation and monitoring. Table 3.1 in Chapter 3 summarizes major licensing regulations in the four states in this study.

In addition, the frequency and thoroughness of monitoring of centers also varies among states (U.S. GAO, 1992). In many states, regulated ECE facilities are not inspected regularly, particularly in the case of family child care homes. In Georgia, for instance, homes are only inspected if there is a complaint. In Texas only one-fifth of licensed homes are inspected per year. Furthermore, in many states heavy caseloads make it impossible to perform regular and careful inspections. (U.S. Advisory Commission on Intergovernmental Relations, 1994, p. 29). In a study of differential licensing in Vermont, Gormley found improvement of performance of centers granted a one-year license and deterioration of performance of higher-quality centers granted a two-year license, suggesting the importance of frequent monitoring of centers (at least once a year) even for good-quality centers (Gormley, 1994, ch.5).

State licensing regulations increase costs and therefore reduce supply of regulated ECE services (Kagan & Newton, 1989; Rose-Ackerman, 1986; Gormley, 1991). In addition, costly minimum standards such as higher staff to child ratios eliminate the availability of services which do not meet the minimum requirements, services considered to constitute inadequate quality by the state. They may well affect the mix of services available. For instance, there should be fewer for-profit centers supplying infant care in states with low child-staff ratios. This disadvantages parents who need infant care and are willing to purchase lower quality care.

In addition to its presumed effect on quality, an advantage of licensing is the added security felt by parents in the knowledge that given standards are being maintained. Licensing, while adding to costs, provides more confidence that minimum standards are being met. In this sense, parents using licensed centers are buying not only the services but also this assurance. Goods and services with these characteristics are called *trust goods* by economists, a concept which will be discussed in the next section.

MARKET DEMAND

The very decision by mothers to move into the labor force is dependent on the availability of affordable child care services (Connelly, 1991; Ribar, 1992). Purchase of child care services permits a mother to work, but if the child care fees are too high, the relatively high cost of care counteracts the positive effect on family disposable income (the income the family has to spend) of the mother going to work.

The Effect of Changes in Fees on the Quantity Demanded

Market demand describes the relation between the amount and quality of services buyers purchase and fees. Studies of the market demand for child care indicate that the quantity of services purchased is very sensitive to changes in fees. That is, if fees drop by, say, 10%, quantity of services purchased will increase by more than 10%, enough to compensate for the drop in price, so that total expenditure on child care will increase. Similarly, increases in fees will reduce the quantity of services demanded significantly. If fees increase in one sector of the market only, they could reduce the amount of services produced by that sector significantly (Rose-Ackerman, 1986; Robins and Spiegelman, 1978). This is partly because child care costs represent a relatively high percent of family income. A recent study estimated that for families earning less than $1500 per month, child care expenses averaged 22% of family income, whereas families earning $4500 per month or more spent an average of only 5% of their family income (Casper, Hawkins, & O'Connell, 1994, p. 23). The quantity of ECE services of low income families is limited by the percent of income used to pay for ECE services. If the price for child care drops, individual families will purchase a larger amount of services at the lower market price. In addition, some families will decide it is advantageous for the mother to purchase child care services and take a paying job.

Demand Conditions

Demand conditions are the influences determining market demand, or buyers' willingness to pay for services. Demand conditions change over time, increasing or decreasing the amount of services families are willing to buy at a particular price. Conditions which affect decisions about purchasing child care services include the parents' values, preferences, knowledge, home location and income.

One important demand condition is the importance to a family of location convenience. Working parents, particularly working mothers, must make efficient use of their time. Therefore, convenient location is a major factor in choosing a provider, and may have to be traded off against program quality. If a new center opens in a particular neighborhood this changes demand conditions, families needing ECE services may switch to the new center, particularly if the center fees are lower than those of existing centers and family child care providers in the neighborhood.

Another important demand condition is parents' knowledge of the array of options open to them, and of the quality of services provided by different providers. This includes knowledge of alternative providers, of the differences in services offered by each provider, and of the characteristics of good-quality services. The more parents know about their alternatives and the qualities of good-quality, the better their choice. In purchasing child care parents ability to acquire knowledge is severely circumscribed because they cannot easily monitor the services since their child receives them while they are at work.

Related to these first two demand conditions is a third, parents willingness or ability to acquire the information necessary to make a good choice and to monitor the quality of services once their child is receiving the care. Some parents are more able than others to spend the time and possibly money to search for and assess alternative providers. The time, money, effort that goes into choosing a provider are *transactions costs*. Some parents are more willing or able to incur such costs to find good-quality care.

Parents' values and preferences represent a fourth set of demand conditions. In addition to preferences already singled out above -- location convenience and willingness to incur transactions costs -- there are many other preferences based on values about the kind of child care they are desirous of purchasing. These include preferences related to specific curriculum used, religious orientation, environmental factors such as physical attractiveness of the center or size, auxiliary services provided, extent of parent participation in center activities and governance, etc. With respect to aspects of quality, they may also have specific preferences. They may, for instance, mainly be looking for safety for their child rather than for a developmentally appropriate program. This latter set of preferences could partially account for the failure of parents to pay for good-quality ECE services if they think of child care programs mainly as safe places for their child rather than as learning environments. Such valuations of the quality ECE services will show up in the market prices of the services, the market value of services, which is only a reflection of actual societal values.

All of these and other considerations about what to buy have to be traded off against the family's purchasing power. The family unit not only has limited income, it has many potential uses of its purchasing power. Thus, inherently, there is a tension within the family between the parents' need or desire to work and the child's needs for good-quality services. Indeed, empirical research has established that demand for ECE services by families is highly responsive to changes in income (Kushman, 1979; Robins & Spiegelman, 1978).

ECE Services as a "Trust" Good

ECE is a classic example of a *trust good*, a good or service, the quality of which is very important to the buyer but difficult to assess so that trusting the seller's honesty becomes important. In the case of ECE services, parents are concerned about their child's safety and general well-being, but because they do not consume the services directly, they normally cannot easily assess quality (Blau, 1991; Browne Miller, 1990; Cryer, 1994). Parents who are aware of the problem and can afford it may be willing to pay extra to employ a provider they think is reliable (Weisbrod, 1988, pp. 7-10, 59-60, 71, 85). That is, they are really paying for two things, the services for their child and peace of mind. This desire for a trustworthy provider explains the importance of licensing, volunteer accreditation, nonprofit status for centers, and name recognition.

MARKET IMPERFECTIONS OF FAILURES

A well-functioning market is one that satisfies consumer demand efficiently, that is, at the lowest possible cost. Characteristics of such a market include well informed buyers and sellers, the absence of *externalities* (all costs and benefits are captured by market transactions), and the absence of monopoly power which restricts competition. Thus, poorly informed consumers, externalities, and monopoly power are sources of *market imperfections* or *market failures*, the failure to produce what consumers want at low cost. Often market failures can be corrected to improve market operation through various kinds of government or philanthropic interventions.

This and the next section outline the major potential sources of market failures in center child care markets. This section discusses demand-side imperfections. First, parents and other purchasers of child care may be inadequately informed or concerned about purchasing good-quality care. That is, the market demand suffers from asymmetric information and the agency problem. Second, child care provides external benefits to people who do not directly receive the services and therefore do not have to pay for them. This is because child care services are both a merit good and a collective good. Unless these beneficiaries do pay, their demand is not *effective*,; that is, it is not reflected in market demand.

Asymmetric Information

Efficient market operation requires both buyers and sellers to be well informed about the full range of possibilities. Knowledge of the market permits buyers to make informed choices about the quality of service they want to purchase. Savvy buyers require sellers to provide such services efficiently. The trust good aspect of child care services implies that in this market, many parents are not adequately informed about the whereabouts or the quality of services and are aware of the problem (Hayes, et al., 1990). Many may not be so aware. In addition, most parents do not have the knowledge necessary or the option to monitor the quality of child care they purchase. The child, not the parents, receives the services and usually cannot explain exactly what is going on during child care.

Thus, in the jargon of economists, ECE markets suffer market failure based on *asymmetric information*, a situation in which the buyers are less well informed about the quality of the services than the sellers of services. The potential result is that low-quality providers can charge fees equivalent to higher-quality providers. This gives them a financial advantage, assuming that low-quality services are cheaper to produce. They may be able to continue in business, possibly earning higher income or profits. In other words, in a market with asymmetric information, some providers can provide low-quality care without being forced to reduce prices, so that there are incentives for providers to lower quality. Conversely, there are negative incentives for providers to upgrade quality since doing so may put them at a competitive disadvantage.

The Agency Problem

In purchasing child care, parents act for their child in demanding services, so that the interests of the child are not directly reflected in the demand for services. This is a version of what economists call an *agency problem*. The parent or parents act as the agent for their child in the market exchange, just like a union acts as the agent for employees in negotiating a collective bargaining agreement.

The principal-agent problem arose in economics to deal with cases of apparent conflict between the agent and the principal, the person whom the agent represents in a negotiation. The classic principal-agent problem is between the owners versus the managers of a large corporation. To ensure that the agent acts in the interests of the principal, the agent's interests must be in line with those of the person he or she is representing. This requires designing incentives for the agent that induce the agent to work for the interests of the principal. For instance, if managers of corporations receive some of their pay in stock in the company, they are more likely to manage in ways that will increase the value of the company's stock, which is an important goal of the stock-holder. The principal-agent problem when applied to negotiations of parents for their children is quite perverse. In most cases, parents have needs too that conflict with those of their children, and there is no mechanism for creating incentives that resolve this problem. However, the presence of this kind of market imperfection, like others, provides a rationale for public subsidies. If, for what ever set of circumstances, the parents emphasize their own satisfactions which are unrelated to the satisfaction of raising a successful and happy child, the demand for quality in child care may be reduced.

Indeed, the agency problem may be a serious one in the purchase of child care. There is some evidence that good-quality ECE services might be underconsumed because parents undervalue the services even when they have full information. Studies reported in Hayes et al. (1990, p. 241) indicate some lack of concern about quality as defined by professionals. Parents choose care based primarily on cost, location, convenience, and hours of operation. According to one study, surprisingly few parents visit more than one center before enrolling their child (Hayes et al., 1990).

ECE Services as a Merit Good

ECE services are what economists call *merit goods*. Products or services are merit goods if they need to be supplied to individuals or families in larger quantities than would be supported by private demand, because of community values (Musgrave, 1989, p. 57). Child care is a merit good to the extent that altruistic citizens, possibly the public at large, value the service enough to make more or higher quality services available to children for purely altruistic reasons, because the services are good for children. They believe in the value - or merit - of the service to children and their families and are willing to subsidize the care. They often support such early care and education as a remedy to disadvantages suffered by these children. In short, philanthropic groups or the public are willing to help other families.

ECE Services as a Public or Collective Good

ECE services are also a *public* or a *collective good*. This means that individuals other than the direct consumers of the services benefit from children being cared for in the child care market. For instance, high-quality services are a successful intervention for at-risk children to prepare them for school and to increase their chances of growing up to be productive citizens (Hayes et al., 1990). To the extent that the children lead more productive lives as adults, the expenditures on ECE reduce the public costs of later interventions. Furthermore, society as a whole benefits from the positive contributions made by these adults as workers, citizens and parents. Public policy makers justify programs such as Head Start partly on the grounds that the public as a whole will benefit from the program. To some degree, all children are at-risk so that public investment targeted to a broader range of children can be justified on the same grounds. All children using full-time child care encounter some dislocation in their lives, and children from middle-class families that are under stress can, literally, be at-risk even though public definitions of the term do not include them. To the extent that good-quality ECE services represent a successful intervention for these children as well, the public will benefit.

The difference between the concepts of "merit" good and collective or public good should be noted. In both cases, people other than the direct consumers benefit from provision of more services, and therefore must be willing to pay part of the cost of providing them if "enough" services are to be provided. In the case of merit goods, the indirect consumers of the services are motivated by fairness and altruism. They want more services for the families needing ECE. In the case of collective goods, the justification for intervention is to promote the long-run interests of the community as a whole, a concern for the collective good of society. Decisions about the need for more collective goods are often based on cost-benefit analysis, whereas decisions about financing merit goods depend on social values.

Remedies to Market Imperfections or Market Failure

The market imperfections just outlined, if they exist to any extent in ECE markets, indicate market failures: an inability of private market interactions to provide enough good-quality services. Not enough ECE services will be demanded by the direct consumers to satisfy the indirect demand for the services from altruists and the public since parents purchase what they can afford, given the information they have about ECE services, their preferences and income. However, the parents' preferences and decisions do not take into account the benefits received by the rest of society; sometimes they do not reflect the societal values about child rearing. In particular, the demand of low-income families is limited by their income. In order to satisfy nonparental demand for ECE the demand of philanthropic groups and the public must become *effective*; that is, these groups must pay for the services they demand. If they do not, the market does not provide the optimum amount and quality of services.

Who Should Pay for ECE Services?

The institutional arrangements which evolve for paying for child care services are an important factor affecting demand, particularly in a market where external benefits exist. To make demand *effective*, all beneficiaries of ECE should be helping to pay for services and this requires putting in place the institutions which make this possible. Perhaps this can be illustrated by introducing another set of players on the demand side of the market, the employers of young parents who need child care.

ECE services for working parents represent a cost of working. Traditionally, child rearing has been the responsibility of private families who bear the cost and reap most of the benefits. Therefore, when mothers began to enter the labor force *en masse*, they and their employers considered the cost of child rearing a private, family cost. Nevertheless, employers are part of the equation, because they have been attracted to hire female employees partly because of the low pay they command relative to males with the same skills, or by other advantages of hiring female employees (Reskin & Hartmann, 1986). The expense of child care, however, raises the cost of going to work and, therefore, figures into the wages women will accept (because most women will not work unless their wages compensate them adequately, given child care costs). This creates a pressure to raise wages for women which, in turn, reduces the incentive to hire women instead of men. Thus, payment of child care costs becomes a condition of employment and potentially a negotiable part of the employment contract.

In short, hiring mothers has created a new cost of going to work. The question is, who is going to pay this cost? This is a decision that must get worked out gradually through negotiation and public debate. In the past, when similar increases in the cost of going to work have occurred, it has often turned out that these costs have been partly absorbed by the public. For instance, in the 19th century, workers lived within walking distance of work so that there were no commuting costs. With urbanization, however, workers began to have to spend money to commute. This meant a higher cost of living for workers which eventually had to be reflected in their paychecks. But it also required a more highly developed transportation system - an expanded infrastructure. To a large extent, the cost was shifted to government so that some of the cost of commuting was shifted to the public. Employers incurred direct costs through expanding parking at the work site. ECE for employees is an analogous cost of working, but deciding who should pay is made more difficult because not all employees have child care costs. Private families, employers of the parents, and the general public all benefit from child care provision and should pay part of the costs. However, how the actual costs are shared will depend on relative bargaining strength, each group's assessment of their own interests, and the gradual development of institutional arrangements which reflect these factors.

THE EFFECTS OF COMPETITION ON MARKET PERFORMANCE

Other sources of market imperfection can come from the supply side due to competitive conditions among suppliers that can reduce quality or increase cost. In ECE the private and public demand for services creates a complex industry structure. The prevalence and importance of nonprofit centers reflect public and philanthropic demand for ECE services and a need to create trustworthy producers. Economists who have studied the industry recognize the altruistic basis of the nonprofit sector (Rose-Ackerman, 1986) and its trust good aspect (Weisbrod, 1988). Nonprofit trust-type service organizations help solve informational problems because their managers do not share in profit; therefore, they lack the incentive to misrepresent their services. They also increase the availability of services, especially to low income families.

As noted above, the child care center industry is a mixed industry which supplies a trust-merit-collective good; is composed of for-profit, public, and nonprofit providers (Weisbrod, 1988; Salamon, 1992); and competes with family child care providers and other providers of ECE services. Weisbrod estimates that 49% of services are produced by nonprofit and public agencies (ibid., p. 190); more recent estimates place the percentage nearer to 35% (Casper et al., 1994, p. 21).

Competition in mixed industries is affected by the differences in ownership and aims of the different producers as well as by the differential effect of the legal environment and public policies on each sector. A major emphasis in this study is to identify and understand differences in quality and costs of production for for-profit and nonprofit centers. We have been interested in investigating the existence of market imperfections due to the way the industry is organized. The economics literature suggests some possibilities for market imperfectiions, including conflicting arguments about the relative efficiency of the two sectors.

Lower Quality in the For-profit Sector

One hypothesis is that the for-profit sector tends to produce lower quality. Maggenheim's analysis (1990) leads to a prediction of lower quality services in the proprietary sector, because of industry competitive pressures. She argues that while *barriers to entry* are low relative even to other service industries, they have been increasing and are considered significant by the people contemplating starting up a center. She suggests that *economies of scale*--average costs are lower for larger centers--and high start-up costs may exclude potential providers who lack access to capital markets. In particular, it may be harder to enter the industry at higher quality levels because of higher start-up and operating costs and the length of time it takes to gain name recognition. Barriers to entry can also permit existing enterprises to continue to earn profits even while providing relatively low quality services because new high-quality entrants do not come in quickly enough to compete profits away.

Walker's explanation for lower quality in the for-profit sector is based on *hidden action*, the tendency to provide lower quality and lower cost care to customers who cannot monitor service provision (Walker, 1991, pp. 67-68). According to this argument nonprofit centers would not practice hidden action because they are not profit maximizing institutions. In fact, the objective of many nonprofit centers is to produce high quality services.

For-profit centers may also produce lower quality services than found acceptable by ECE professionals because their decisions about quality must take into consideration consumer preferences which may not coincide with practices considered by professionals to be crucial to good-quality. For instance, centers may be well-appointed, attractive, conveniently located, offering interesting summer camp programs, etc., important characteristics to potential customers, but not essential to good quality as defined by professionals. Interestingly, compared to improved staffing, these characteristics may be relatively inexpensive.

Inefficiencies in the Nonprofit Sector

Economists also identify potential inefficiencies in nonprofit center operation. Ordinarily, nonprofit centers are managed by directors and boards who gain no pecuniary reward from making profits; rather, their purpose is to produce high quality, or to serve a particular population of children, etc. This implies that for nonprofit or publicly operated agencies there is no built-in incentive for directors to minimize the cost of operations. Thus, although nonprofit centers generally may produce higher quality than for-profit centers, they may not operate cost-effective enterprises that are sensitive to the preferences of their customers. James and Rose-Ackerman (1986) have argued that donations to and public funding of nonprofit organizations to increase supply or improve quality may result in *shirking*, that is, misuse of funds which allow a nonprofit organization to pay higher salaries or spend more on administration, or hire more people, etc. In a comparative study of profit and nonprofit ECE centers in Massachusetts, Mukerjee, Witte, and Hollowell (1990) found that subsidies to nonprofit centers may not lower child care costs to parents, and may contribute to inefficient allocation of resources.

In another paper, Rose-Ackerman also suggests that the shirking theory may not apply in the child care market where ideological commitments are important motivators (Rose-

Ackerman, 1986). If the additional resources were used to produce a better quality and if that quality is desired either by consumers or by the rest of society, then management would not be "shirking." In fact, altruistic management in nonprofit child care centers may result in efficiency as great as in for-profit centers.

Another factor in the ECE industry that affects cost and quality is the availability of in-kind subsidies to nonprofit centers. Although it may seem counter-intuitive, these subsidies may create competitive pressures which lead to lower quality ECE services. Nonprofits have a competitive advantage in providing good quality to the extent that they can lower parent fees by attracting in-kind contributions, free rent (in churches or publicly-owned facilities), charitable gifts and grants, USDA food subsidies, etc. Some of these types of revenues and support are unavailable to for-profit centers. Their use by nonprofit centers could lower their expended costs and permit them to charge lower fees, which for-profit centers must then attempt to meet. However, differences in costs between the two sectors could create competitive pressures on for-profit centers to reduce the quality of services provided, if, for instance, they reduce labor costs to offset higher facilities costs.

Responsiveness to Changes in Market Demand

Still another effect of competition is the difference in responsiveness of the sectors to increases in demand. When demand for services increases, for-profits should increase the number or size of centers, and move into locations where there is an excess demand. However, Rose-Ackerman has suggested that the nonprofit sector may be less responsive to growth, because its growth is limited by the availability of altruistic managers and the available individual, philanthropic and public financial support. Their growth is also affected by public policies to support given kinds of programs. To the extent that nonprofits and public agencies do not expand when confronted with excess demand, queues (waiting lists) form to ration low-price or high-quality slots (Walker, 1991, p. 73). Rose-Ackerman found that the industry as a whole does respond to excess demand, mainly through the expansion of the for-profit sector (Rose-Ackerman, 1986). She presents data to indicate that this sector has responded to increasing demand for services, and represents a growing percentage of the market.

THE INTERACTION BETWEEN LOW WAGES AND QUALITY

In markets such as ECE, extensive price competition creates continual pressure to keep down costs. In this industry, where labor inputs represent 60 to 80% of costs, pressure to lower costs can adversely impact quality of services, because it means cutting labor costs by increasing the child-to-staff ratio or paying lower wages. High-quality staff, low child-to-staff ratios, small group size, and low staff turnover all contribute to good-quality services. However, low wages in child care, even compared to other female occupations with comparable education and training, seem to exist and negatively impact quality by making it difficult to hire and retain more qualified staff (Culkin et al., 1990). Not surprisingly, turnover is high, although recent studies have reached slightly different conclusions about how much turnover exists (Whitebook et al., 1989; Willer et al., 1991).

Economists provide two explanations for low wages in markets like child care. The first and standard argument is that low wages earned by women in a field such as ECE represent a negative *compensating wage differential*, a discount women are willing to give because they prefer work in early care and education over better paying alternatives. A compensating wage differential refers to the extra pay earned by a person doing a dangerous or unpleasant job like radioactive waste clean-up or garbage collection. In the case of work which some people find pleasurable for its own sake, possibly in ECE, there is a negative compensating wage differential since the market wage is lower than normal, given the job qualifications.

Second, low wages could be due to labor market discrimination against the pool of women providing ECE services, for instance, young mothers who need to work part-time close to home where they can bring one or more of their children needing child care. This second explanation assumes that most ECE workers do not have much choice in employment, because of discrimination against these women by other employers, for instance, employers who will not retain new mothers who require time off or part-time work.

With respect to both of these explanations, the wage or salary differential would not exist if there were not *crowding* of women into female occupations, and in ECE occupations in particular (Bergmann, 1974). Crowding in a labor market occurs when workers, such as women, move (crowd) into certain occupations where they are in demand, because of discrimination against them in other labor markets which effectively excludes them from higher paying jobs. They become "female," low-pay occupations because of the supply of women willing to work at these jobs. This permits ECE employers to benefit from employee preferences or discrimination in other labor markets. That child care work is a low-pay occupation, has been demonstrated again recently in a Census Bureau survey reporting that the median weekly income of child care workers in 1994, $158 per week, is the lowest of 49 occupations studied, below farm workers ($254 per week) and janitors and cleaners ($293 per week) (*The New York Times*, May 14, 1995, F11).

Whatever the cause of the crowding, i.e., the large supply of women willing to work in ECE, jobs in ECE appear to be designed to tap workers in the low-wage labor force (sometimes called the *secondary labor force*) and, possibly, the employment needs of young mothers for part-time jobs close to home (Fuchs & Coleman, 1991). This labor force is composed of people with little work experience, people with few skills, groups who have been discriminated against in the labor market, people who move in and out of the labor force, part-time workers. They represent a pool of workers who will accept low paying jobs with little prospect for advancement. To the extent that some jobs in ECE are designed for unskilled members of this low-wage sector of the labor force, costs can be reduced. However, the willingness to hire from this pool of workers encourages high staff turnover.

As a young, growing industry, the labor force in ECE is in the process of professionalization. As yet, there are not enough institutional barriers in place to prevent employers from tapping into the mainstream of new or casual labor market participants, a strategy employed to keep down labor costs in this competitive industry. One of the problems related to hiring people in the secondary labor force is their tendency to move from job to job as they gain more job experience and attachment to the labor market. While this turnover in personnel might not seriously affect the quality of hamburgers, it can be very damaging to quality in ECE.

The argument is often made among ECE professionals that center staff subsidize the cost of care through their low wages. This is true for people, mainly women, who provide their services at less than what they are worth. This kind of subsidy can be calculated by estimating ECE workers' *foregone income*, earnings they could have earned in other jobs in the labor market for which they are qualified, given their training and experience.

An important public policy issue is the effectiveness of raising wages as a strategy for increasing the quality of ECE services. Many studies have indicated that wages is the single most important variable related to quality of ECE services (Phillips, 1994; Whitebook et al., 1989). Economic theory of production argues that higher quality services are produced by higher quality staff members. Standard labor market theory argues that workers with more skills receive a wage differential which reflects their higher productivity. Thus, to produce higher quality services, centers would have to pay more in order to attract more highly skilled employees.

What, then, is the predicted effect of raising wages - should raising wages increase the quality of services? Economists argue that higher quality staff increases quality, not higher wages per se. The immediate effect of raising wages would be to increase income of existing workers, a laudable result given the apparently abnormally low wages in the industry. The only reason that quality would increase would be if the wage increase increases morale and therefore productivity; for instance, by reducing absenteeism, or increasing staff effort or loyalty.

Although one might not expect wage increases to increase quality in the short-run, there should be positive long-run effects if the higher wages permit centers to hire more qualified people with more education and experience. In particular, centers which pay considerably more than the going rates should be able to cream off the most highly qualified workers.

SUMMARY

It is important to emphasize six major issues raised in the above analysis. These all raise questions about the efficient provision of good-quality ECE services which this study investigates.

First, the ECE industry has been characterized as operating in local monopolistically competitive markets. These highly competitive markets result in low profits, extensive price and product competition, and excess capacity. Are these characteristics of the ECE industry?

Second, does quality differ by sector and auspice? Because ECE is a mixed industry composed of profit and nonprofit auspices as well as public agencies, there are several empirical questions raised about performance of the different types of suppliers. Theory tells us that profit-oriented centers should respond to the market and try to minimize costs in order to maximize their profits. Possible negative consequences of market-driven operators are that, guided by parental preferences, current values, and lack of knowledge, for-profits may sacrifice quality as defined by ECE professionals and may ignore low-income customers. Possible positive consequences of profit-oriented management are that for-profit centers may react to consumer demand by providing innovative programs and efficient, cost-saving procedures. The presence of adequately financed national systems of centers may also induce innovation if these corporations choose to invest in training and development of standardized practices which bring about good-quality services, etc.

The theory of the nonprofit sector argues that nonprofit and public agencies may be organized for altruistic purposes based on ideological commitments. When this is true they may emphasize producing good-quality services, affordable care, or services to low-income families. The possible negative consequence of nonprofit organization, however, is inadequate attention given to minimizing costs. Is there evidence that nonprofit centers provide better quality and are cost effective? Alternatively, some nonprofit centers that serve large numbers of subsidized low-income children may be unable to provide good-quality care because of low state reimbursement rates for serving low-income children. These same low reimbursement rates may provide a disincentive to for-profit centers to serve these children.

Third, does this study provide evidence of market segmentation into sectors serving children of different socio-economic status? If so, how does this affect the costs and quality of services provided to different groups of children?

Fourth, how is the ECE center market affected by public intervention? For instance, what is the impact of state licensing regulations on the quality and cost of services provided, as well as their availability? Similarly, what is the impact of subsidies, both public and private, on the cost and quality of services?

Fifth, are parents fully informed consumers? Much of current public policy is based on the assumption that parents are informed consumers when they select child care for their children. This assumption leads to the conclusion that parent reports of high satisfaction with child care permits us to discount concerns of ECE professionals about the inadequate quality of care.

Sixth, how do labor market operations and personnel policies of centers affect the cost and quality of child care? To what extent are relatively unskilled staff persons being used? How much evidence is there of the dependence of the industry on foregone wages of highly qualified staff members to maintain some level of quality of care and still contain costs? How do wages affect quality?

PRODUCING QUALITY EARLY CARE AND EDUCATION: A CONCEPTUAL STRUCTURE

This section defines what is meant by quality in this study and discusses how centers produce it. It presents a conceptual structure outlining the relationship between cost and quality of ECE services, and the development of the children receiving the services. This provides the theoretical foundation for the research.

DEFINING QUALITY OF ECE SERVICES

Early care and education centers provide a complex set of services rather than a tangible good. Unlike producing clothing or automobiles, labor services used in creating child care are consumed by the children in the process of providing them. That is, the services are received by the children as they are carried out by the center staff. This helps to explain the overriding importance of the quality of staff in ECE. Staff actions and interactions with the children are what the children experience. Even though a carefully planned and well equipped environment is important to achieve good quality, personal relations are overriding.

Since a major end product is the impact on child development, quality of services must be judged by their effect on the children. In the case of child care, this means that good-quality ECE services should promote the development (cognitive, social, emotional, motor, moral) of the children they serve as well as facilitate work force participation by parents.

Even though the children's development is the goal, it is still the case that what the center provides is the service, not the child outcomes. Center outlays pay for the services provided, which can be considered an intermediate good contributing to the final good, the children's development. Therefore, it is appropriate to judge center quality in terms of its services. It is also important, of course, to judge quality in terms of children's development as a result of their experience at centers, recognizing that the center environment is one of several environments affecting the children's development.

In defining the quality of ECE services, three different kinds of quality must be considered: structural quality, or the quality of the resources used; process quality, or the quality of the services taken as a whole; and child outcomes or the effect of these services on the children. These three ways of looking at quality of services are integrally related. High-quality inputs to producing ECE services (measured by structural quality) should produce a high-quality overall ECE program for children (measured by process quality indices). In turn, a high-quality program should lead to higher levels of development for the children in these programs (measured by child outcomes).

The ECE community refers to the quality of the inputs to production as *structural quality*, because at least some of these attributes are easily observed and measured, therefore regulatable by the state. These structural quality measures include the staffing ratio (in this study measured by the ratio of teachers to children present in a room), group size (the number of children in a given room), measures of teacher and director education, training and experience; square foot per child and other measures of the quality of the facility which houses the center.

Process quality refers to the general environment and the social relations in the ECE center. Process quality measures the quality of services which are directly received by children and their families. The measures used in this study will be described in Chapter 3 below. Briefly, high-quality ECE, as defined by the profession, includes a well articulated program of good care, developmentally appropriate activities for children, nurturing staff members who interact with children to promote their emotional security and development, and a physical environment which provides adequate stimulation and opportunities for a wide variety of activities. Instrumentation for measuring process quality has been developed and used extensively to study process quality (Harms & Clifford, 1980; Harms, Cryer & Clifford, 1989; Arnett, 1989).

Child outcomes refers to the observable levels of cognitive and social functioning of the children, as well as outcomes related to the children's success in school, and the potential long-run effects on the children's success as adults. (Another important set of outcomes of ECE services is the effects on parents - on their parenting skills, and their own productivity at work. There was no attempt in this study, however, to measure the effects of ECE services on parents.)

Although there may be consensus among professionals about what constitutes center quality, this is not true among families and others who purchase care. Blau distinguishes between definitions of quality used by ECE educators and by parents (Blau, 1991, pp. 148-154). He illustrates the differences between the educator's model and the economic model to make an important point, namely, that consumer preferences are related to many ECE attributes, not just child development outcomes, such as shared values and convenience. Recognition of the potential differences in criteria used to judge ECE services between professionals and purchasers is implied by the analysis above which hypothesizes asymmetric information in the market, the existence of a principal-agent problem, and the merit and collective good character of ECE. In this study, the professional educator's definition of process quality is used to define center quality; however, a major component of the research is an analysis of what aspects of ECE parents value.

A CONCEPTUAL STRUCTURE

Figure 2.1 depicts relationships among the different measures of quality discussed above. It is not meant to be the definitive model of center operations, but to picture the theoretical approach taken in this study and to aid in the presentation of results.

In the conceptual structure the center is shown as the shaded oval; the parts or domains studied in this project are depicted by the circles inside the oval. Each circle represents a function of the center which either directly or indirectly affects the quality of center services and the development of children served by the center. The arrows show the assumed direction of relations and interactions among domains which are of most importance to this study. Some of the arrows depict relationships that were tested, some represent relations which tie center performance to the regulatory environment and their operation in local ECE markets.

The circles also indicate the major categories of data collected. Table 2.1 lists the specific variables measured and instruments used to collect data in each domain. For instance, classroom structure measures include staffing ratios, group size, staff characteristics and education, teaching style, and the types of activities. The specific measures will be described in more detail in Chapter 3.
Figure 2.1 depicts the center as part of the larger community, serving families and their children (which are both part of the center and partly outside the center's influence). The state domain represents the geo-political and economic environment, historical context, and resources in the community. It also represents the regulatory environment in which the center operates and public subsidies to centers. The local labor market supplies staff and sets wages and salaries which the center must at least meet. Philanthropic agencies, corporations, and employers provide resources and support, affecting the demand for and supply of center services. These agencies increase the quantity and quality of care demanded when they provide tuition; they increase quantity supplied and reduce cash costs when they provide in-kind inputs such as facilities.

The middle circle, center structure, represents the structural characteristics of the center, and also the administrative function which will be discussed below. Table 2.1 lists the structural features which have been measured in this study: age of the center, auspice, age of children served, size of the center, curriculum, administrative leadership, personnel policy, use of volunteers, to name a few. Center structure affects all aspects of center operations. The center operates within a given place in the ECE market: it is a for-profit, nonprofit, or public agency; it attracts a particular clientele, it operates subject to given state regulations and subsidies. These affect demand for and supply of its services.

The model shows both the market-oriented factors that affect cost and quality, and the internal production process within the center. The arrows from the outside institutions - state, labor market, philanthropy, and families - represent aspects of demand and supply conditions created by outside institutions. The capital facilities and finances circles represent the economic aspect of center operations. The other circles depict the process of service provision or production.

Tracing the direction of arrows yields hypotheses about the direct and indirect interactions of domains in the model. For instance, capital facilities are regulated by the state, which limits the center management's decisions about size and quality of capital facilities. Thus, state regulations have an indirect effect on capital facilities. However, the actual capital facilities chosen directly affect both costs and classroom structure, which affects classroom process quality.

The model indicates the determinants of quality of services, suggesting hypotheses about the process of providing services of a particular quality level. Some classroom structure characteristics - staffing ratios; group size; staff education, training, prior experience, tenure on the job - directly affect process quality. Center structure characteristics - the size and scope of the program, the center's philosophy and curriculum choices, use of volunteers, quality of administrations - and center facilities indirectly affect the quality of children's experience in the center. These hypotheses are tested in this project.

The relation between cost and quality is shown through the arrow from classroom process quality to finances. Given the level of quality the center tries to achieve, it must hire a particular quality of staff and use particular staffing ratios, etc. These decisions about quality necessarily affect costs. This relation between cost and quality is a major subject of study in this project.

The children circle represents children as the recipient of center services, and the data collected in the study measures their level of cognitive and social functioning. Arrows from the classroom process quality and the families circles indicate that a child's development is directly affected by overall center quality and the child's family characteristics such as family income, parent education, etc. Learning about the relative importance of center versus family characteristics on children's development is a major purpose of the longitudinal continuation of this study. In Chapter 14 we report results based on the first year of data collection on children's cognitive and social abilities.

Finances affect and are affected by the center's program and quality of services. The arrows into the finances circle depict sources of costs and of flows of revenue into the center. Families, the state, and philanthropic or corporate agencies provide the center revenues, based on the center fee structure. The arrow into the Center Structure circle indicates that center financial viability affects center structure and administrative decisions. Supply responds to demand.

Parental influence enters the model through their purchasing power, and therefore their influence on center policy. Their willingness to purchase services is based on certain expectations about the quality and nature of services they are purchasing. Notice that according to this model, the family circle has no direct influence on classroom process, that is, on the quality of services. The arrow from the process quality circle to the family circle indicates that parents know something about the effectiveness of the services they are buying, which helps inform their decision to purchase services. However, there are no arrows from family to classroom process or center structure. This is an over-simplification. This study provided only limited information about these connections (however, the data collected indicated minimal direct parent participation in center activities).

The hypotheses tested in this study about cost and quality of ECE services are based on assumptions made about the time-frame of center decisions. This study represents a short-run view of ECE center decisions which assumes that centers have a given structure in place -- a given physical space, a set of policies, and ways of operating. In particular, they provide services of a certain quality. Thus, the conceptual structure and our analysis emphasize short-run or intermediate-run decisions of the center, changes which can be accomplished in a year or two.

The Center as a System

Figure 2.1 is more than just a visualization of the relations between cost, quality, and child outcomes. It also portrays an ECE center as a social system which performs a set of functions based on its goals. It portrays the system as incorporating feedback mechanisms which permit the center staff to correct the functioning of the center in order to achieve its goals. This is an important aspect of businesses or agencies supplying services through markets. The great advantage of market-oriented supply is that the businesses or agencies are organized to react appropriately to changes in demand. The conceptual structure depicted in Figure 2.1 features this.

To incorporate this systems view, the center structure also represents the administrator's work with the staff and other involved individuals or groups to carry out the center's goals. This includes center responses to changes in outside influences in the state, in the labor market, in the early childhood education field, and in parents' and others' willingness to pay for, and in other ways support center services. It also includes the administrative/leadership functions at the center which have to do with organization of the center community (staff, sponsoring agency, and parent group) in working to achieve the center's program goals. Given the particular philosophy and goals of the center, the center administrator, in conjunction with the other appropriate persons or entities (such as the owner, sponsoring agency, board of trustees, school board, college, or corporation) operates the center to achieve center goals. Center goals can be varied (and expressed or implicit within the organization) and they affect the center's policies related to program scope, degree of parent involvement, planning process, educational philosophy, personnel policies, finances, board responsibilities, administrative policies and procedures, and administrative style.

Center auspice is of particular importance, because profit-status may affect the center's economic objectives. As mentioned above, for-profit centers should attempt to maximize profits, which means they must minimize costs. Nonprofit centers also face financial constraints, but, in contrast, are organized for some other purpose than maximizing profits - for instance, to provide low-cost care to children in the neighborhood or church, to provide good-quality care, etc.

It is useful to think of an ECE center as a goal-oriented organization managed to achieve its goals through the effective use of information generated as part of its operations. ECE centers operate in markets which provide signals to suppliers about the success of their business or agency via their profit rates. If a center run for-profit satisfies its customers and operates efficiently (at low costs), normally this will show up in its profitability. Nonprofit centers are also organized to meet their goals through internal information systems which provide feedback about their success.

Figure 2.1 can be used to illustrate the difference between the feedback loops which affect management decisions in a typical center organized around market incentives, and, for instance, a typical nonprofit center organized to provide good-quality care. The feedback loop of a nonprofit center, trying to insure good-quality, can be described by the loop from management to classroom structure to process quality to management, with feedback back and forth between management and classroom process, suggesting internal procedures for monitoring quality. For-profit centers use similar monitoring. However, in addition, they must try to maximize profits in order to stay in business. These market incentives create a feedback loop from management to classroom structure to process quality to finances back to management, including the arrows from process quality to family to finances. Management, motivated by market incentives, reacts to demand based on parents' willingness to pay. It should also maintain internal feedback methods to increase quality, but the crucial feedback comes from its customers through their dollars.

A unique feature of this study is the attempt to measure administrative effectiveness and the impact of management on quality of services. The conceptual structure reflects this approach by providing a way to look at these internal feedback mechanisms.

ANALYTIC PLAN AND PRESENTATION OF RESULTS

Data were collected on the characteristics describing each center domain pictured as a circle in Figure 2.1 and listed in Table 2.1. The analysis proceeds in three stages which are summarized in Parts 2, 3, and 4 of this report.

Part 2, Descriptive Comparisons, reports results for each circle in Figure 2. Chapters 4-5 summarize results about center structure variables and physical facilities, such as program characteristics and services provided, parent participation, use of volunteers, center administration and personnel policies. Chapter 6 gives results of classroom structure and classroom process quality variables. Chapter 7 investigates the relation between staff education and training and job titles to determine the extent to which higher job titles indicate more education and training. Chapter 8 summarizes information on center financial structure such as costs and subsidies, including estimates of the full cost of care, revenues and sources of revenue, profits, and fees and fee structures.

Chapter 9 reports on results from the first year of data collection of children's developmental outcomes. Chapter 10 summarizes information about the families using the centers in the study. It describes parent characteristics as well as parent evaluation of center quality, and parent values related to ECE services. Chapter 11 compares differences in performance of centers based on subsectors (designated as *auspices* in this study) within the for-profit and nonprofit sectors, and by types of public and other in-kind expenditures received.

As much as possible, the same procedures are used in each chapter to present descriptive results. Means and standard deviations are reported for the variables within a given domain (circle in Figure 2.1) by state and within state by profit status (profit and nonprofit). Analysis of variance results are reported for each variable to identify significant differences in means by state, by sector, within state by sector, and state x sector interactions. Finally, given state and sector, differences in means were tested with respect to three program scope variables: percent of full-time equivalent (FTE) children subsidized, percent of FTE children who are infants, and existence of a school-aged program.

Part 3 reports results which explore the relationships between circles in Figure 2.1. In particular, Chapter 12 reports estimates of cost functions based on standard econometric procedures but influenced by insights about the effect of quality on cost shown in Figure 2.1. Chapter 13 reports results from three separate analyses of the relation between process quality and its determinants. Chapter 14 reports on the relationship between classroom process quality and children's cognitive and social levels of development.

Part 4 summarizes overall results by identifying thirteen major findings. These lead to public policy recommendations based on study results.

Chapter 2 Appendix

Figure & Table

Figure 2.1 Conceptual Structure: Cost, Quality, Outcomes in Early Childhood Care and Education Study

Table 2.1 Domains, Components Studies, and Instructions Used

Figure 2.1
Conceptual Structure
Cost, Quality, Outcomes in Early Childhood Care and Education Study

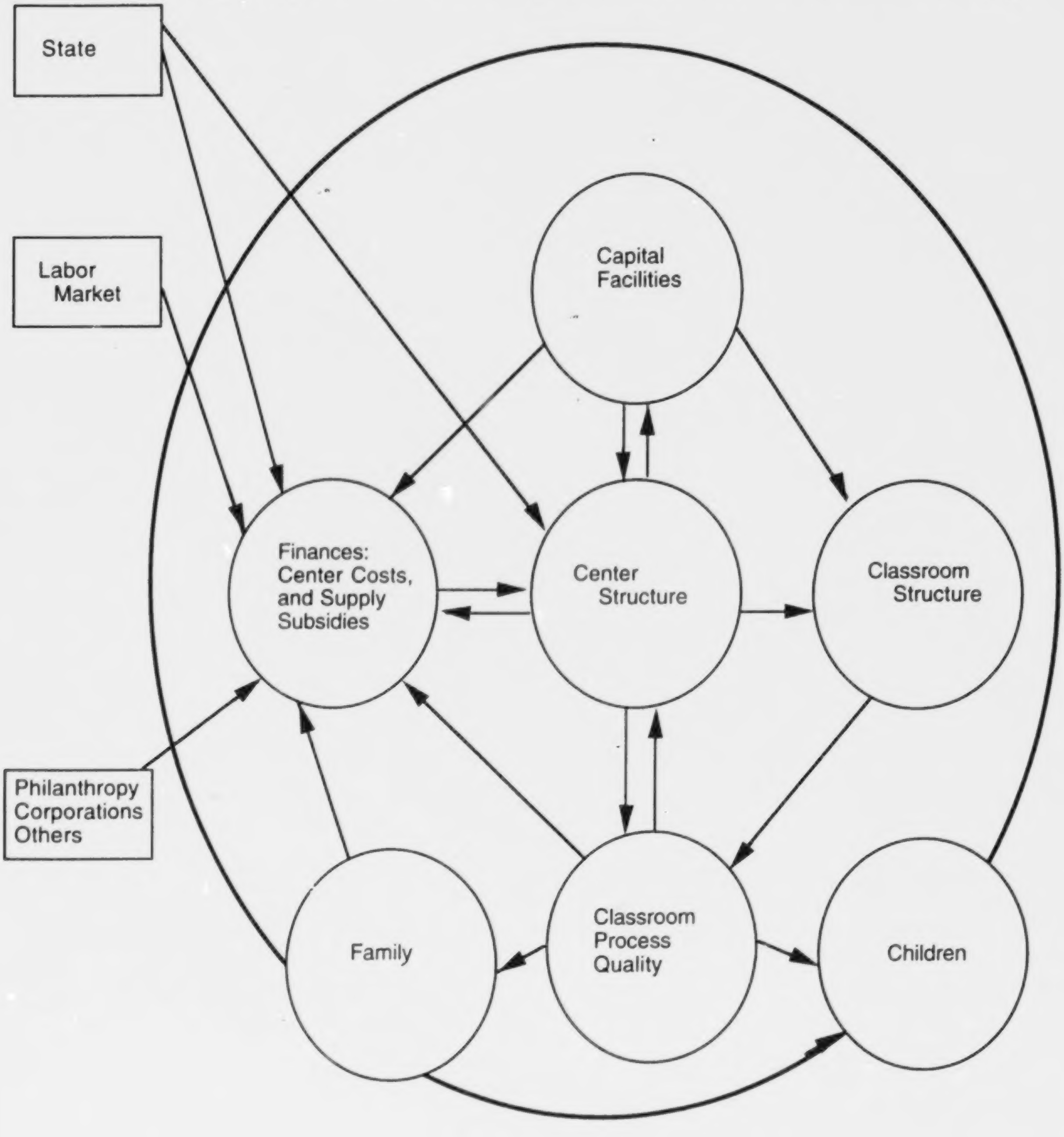
State
Labor Market
Philanthropy Corporations Others
Capital Facilities
Finances: Center Costs, and Supply Subsidies
Center Structure
Classroom Structure
Family
Classroom Process Quality
Children

Table 2.1
Domains, Components Studies, and Instructions Used

Domain	Component(s)	Instruments Used to Collect Data
State	Licensing Regulation, General Political and Economic Environment Funding for Child Care	Telephone Contact Sheet, (all other instruments) Director Interview
Philanthropy, Corporations & others	Inkind Donations, Cash Donations	Director Interview
Labor Market	Wage Structure	Director Interview, Staff Questionnaire
Capital Facilities	Sq. Footage of Facility, Quality of Facility	Director Interview
Center Costs	Variable Costs, Fixed Costs, Inkind Donations	Director Interview
Revenue	Fees, Subsidies (Public & Private), Other Revenue, Profit	Director Interview
Center Structure	Program when established, hours, ages served, clientel (subsidied, special education) provided curriculum, program scope, services	Director Interview
	Profit Status Personnel Policies, Parent Involvement Use of Volunteers Administration	
	Teaching Staff characteristics, turnover, tenure	Director Interview, Staff Questionnaire
	Administration philosophy, education/training, leadership committment to community training, involvement	Director Interview, Director Administrative Questionnaire, Teacher's Administrative Questionnaire
Classroom Structure	Teacher education, training, experience, age	Director Interview, Staff Questionnaire
	Adult to child ratios, Group size	Observations of Activities in Preschool Director Questionnaire
	Didactic/Child-Centered Teaching Style	UCLA Early Childhood Observation Form
	Content and Type of Children's Activities	Observations of Activities in Preschool
Classroom Process Quality	Quality Index	ECERS, ITERS, Arnett Sale of Teacher Sensitivity, Teacher Involvement Scale
Children	Reading Achievement, Math Achievement	Woodcock-Johnson Tests of Achievement
	Receptive Language Ability	Peabody Picture Vocabulary Test-Revised
	Self-perception of Competence	Children's Attitudes and Perceptions of Competence
	Social Development Status	Teacher Survey-Year 1
Family	SES, Ethnicity	ECERS and ITERS Parent Questionnaires, Outcomes Study Parent Surveys I and II

Chapter 3

Design of the Study

by DEBBY CRYER, ELLEN S. PEISNER-FEINBERG, MARY L. CULKIN, LESLIE PHILLIPSEN, & JEAN RUSTICI

This chapter describes the design of the Cost, Quality and Child Development Outcomes Study. Information is provided on the sample of centers, classrooms, staff, children and parents as well as the data collection procedures and measures used for each of the three components.

SAMPLE

STATES

This study examined the relationship between cost and quality of early childhood care and education programs and the developmental outcomes of children enrolled in the programs in four states: California, Colorado, Connecticut, and North Carolina. These states represented the diversity of early care and education programs found within the United States. Child care regulation in these states was generally representative of the spectrum of licensing criteria from low to high. Table 3.1 shows a comparison of state characteristics and selected licensing regulation standards that were in place during the period of data collection. The states were also considered to be representative of differing regional and demographic characteristics.

The sample of ECE programs included in the study was drawn from subregions within the four states. In California, centers were selected from Los Angeles County; Colorado's centers were located from Colorado Springs through Denver, Boulder, Fort Collins and Greeley; Connecticut's centers were in the Hartford-New Haven corridor; and North Carolina's centers were in the Piedmont Triad area between Graham/Burlington and Winston-Salem. All areas within the states were chosen to represent a diversity in minority population, city size, geographic location, and economic characteristics.

CHILD CARE CENTERS

Cost and Quality Component

Data were collected on a stratified random sample of 100 programs in each participating state, with approximately equal representation of for-profit programs and nonprofit programs. The sample was stratified on this variable because of the demonstrated importance of this structural feature in predicting quality (Keyserling, 1972; Kagan & Glennon, 1982; Kagan & Newton, 1989; Kagan, 1991; Whitebook et al., 1989;) and because of the differing structure of each type of program.

Only programs that were listed as child care facilities by the state licensing agencies were included. The most recent licensing list was used in each state as the sampling pool. All programs in the sampling areas were numbered, and a table of random numbers was used to select each for possible inclusion. Because available information about programs on the licensing lists differed from state to state, researchers in the four states were required to vary their stratified random sampling procedures somewhat. In North Carolina, Colorado and Connecticut, project staff were able to determine the profit status of all programs within the sampling area before programs were selected. Thus it was possible to draw equal numbers of for-profit and nonprofit programs from the sampling pool. Programs refusing to participate were then replaced by randomly selected programs from the same group. In California, project staff used informants who were aware of the Los Angeles child care community to make a "best guess" on the profit status on the licensing lists. Based on this information, two randomly selected groups of programs were created: for-profit and nonprofit. California staff drew a larger sample of for-profit programs because it was anticipated that there would be a higher refusal rate from those centers. As either for-profit or nonprofit programs refused to participate they were replaced by randomly selected programs from the same category. When the auspice of each program was verified it was moved, if necessary, to the correct auspice group.

The total number of for-profit and nonprofit centers actually included in the study is shown in Table 3.2. Of the 200 for-profit programs, 48 were centers from corporate systems of ECE.

Only early childhood programs which served infants, toddlers, and/or preschoolers were included; no family child care homes or programs that served only school-aged children were used. Generally, developmental day care programs that served only children with disabilities were excluded, although three developmental day care programs were sampled because the nature of these programs was not apparent until observers visited the classrooms. Programs that mainstreamed children with disabilities were included. Since the researchers' interest was in programs that provided full-time child care and education, programs had to provide care for at least 30 hours per week, and at least 11 months per year to be included. A majority of children had to attend the program at least 30 hours a week, five days a week, for the program to be included in the sample. Full-day Head Start programs were included in the pool if a wrap-around child care option was provided so that they met the criteria for full-time care. The sample was limited to early childhood programs that were conducted in English, although some programs did serve children for whom English was not the primary language. Finally, newly opened centers were not sampled. Only centers which had been in operation long enough to have one full fiscal year of operating data were included.

Administrators of all programs in the sampling areas were sent a letter briefly explaining the overall project and encouraging participation. Once a program had been randomly selected for possible inclusion in the study, administrators were telephoned and further information about the study was provided. During the telephone interaction, administrators were asked several questions to ensure that the program met all requirements for inclusion, including profit status, age of the center, ages and number of children served, whether the program provided full-time care, and whether it served only children with disabilities. This information was also used to compare participating and nonparticipating programs for response bias. If the program met all necessary requirements, administrators were asked whether they wished to participate. For national ECE corporate systems, initial contacts were made on the local level and continued at the regional and national levels as required.

When the administrator gave permission for the center to take part in the study, an appointment was made for two days of visits by data collectors. Programs were contacted again, by letter or telephone, to reconfirm visits. Additional information was provided about what would be required in the visits. Informed consent from both the director or other administrator and the teachers was acquired as needed by each state site. No centers were included without the administrator's or owner's permission.

The refusal rate for participation in the study varied from state to state. Table 3.3 shows the number of centers which were eligible and ineligible, and of the eligible centers the number which agreed and refused to participate in the study. Of those centers eligible for inclusion in the study, 44% agreed to participate in California, 68% agreed in Colorado and Connecticut, and 41% agreed in North Carolina. The table also summarizes tests for response bias.

For each state differences between means (or proportions) were compared for centers which participated and those which refused to participate using the following characteristics:

- profit status
- year center opened
- legal capacity
- current enrollment
- whether or not center served infants
- whether or not center served toddlers
- whether or not center served preschool children
- whether or not center served school-aged children
- distribution of zip codes

Some centers which refused to participate also refused to answer all or any of the questions in our initial phone contact. Hence, the number of observations for any given test shown in Table 3.3 does not necessarily add to the total number of eligible centers contacted.

Response bias tests revealed the following:

1. There was no statistically significant difference in response rates for profit and nonprofit centers in Colorado, Connecticut and North Carolina. However, in Los Angeles a significantly smaller percent of for-profit centers than nonprofit centers agreed to participate in the study.

2. In Colorado, there were no significant differences between participating and nonparticipating centers.

3. In California, a significantly larger percent of participating than nonparticipating centers served infants. Also, participating centers had significantly larger legal capacity and enrollments than did nonparticipating centers.

4. There were no significant differences in any state between participation and nonparticipation based on age of center, whether or not programs served toddlers, preschoolers, or school-aged children.

5. There were very few significant differences in participation rates by location. Table 3.3 shows the results of a Chi Square test of geographic bias by zip code for each state. The Chi Square measures differences among zip codes in percentages of the centers contacted that participated. There were no significant differences except in California (due to an unusually high acceptance rate in one district).

Developmental Outcomes Component

Centers were included in the sampling pool for the developmental outcomes component if their observed preschool class enrolled children who would be eligible to enter kindergarten in the fall of 1994 (i.e., children who were in their next-to-last year of preschool at the time of the costs and quality observation). Some of the observed preschool classrooms were not eligible because all the children were either too old (graduated into kindergarten in 1993) or too young (enrolled only younger children who would attend kindergarten in 1995 or later). Table 3.4 presents data summarizing the participation rates for centers, children and parents for the outcomes phase.

Before centers were re-contacted for this component of the study, they were stratified by quality ratings and proportion of children served who were receiving subsidies from the data gathered in the first component. Stratification assured inclusion of programs of varying quality and child composition. Because the sample of centers within each state were about evenly divided by profit/non-profit status, stratification by profit status was not necessary. Within the strata, programs and the order in which they were to be contacted were randomly selected. Within each of the four states, researchers were to contact centers until approximately 200 children had been seen. In actuality, most centers were eventually re-contacted to participate in this phase because, at most centers, fewer children than expected were within the targeted age range. This procedure did assure, however, that programs were contacted and visited in a random order (e.g., the high quality centers were not all visited first).

CLASSROOMS

All classrooms observed for the cost and quality components of the study were randomly selected to be representative of each program, one from the older groups (children from 30 months or older, but not school-aged) and one from the younger groups (children less than 30 months) in the program to ensure representation of the age range of children in care. If a program served only one age group or only had mixed age groups, then two groups were selected from those groups available. If a program had only one class, then that class was used. There were only 51 programs with only one class. A total of 228 infant/toddler classrooms and 521 preschool classrooms were included in the study.

CHILDREN

Children were selected for use in the study at two separate times. First, in each classroom observed for the cost and quality component of the study, two unidentified children, a girl and a boy, were randomly selected by data collectors as target children to be observed during the collection of program quality data. The boy and girl who were present during the observation with birth dates closest to January 1 were observed to assess level of play that took place in the classrooms. No other information was collected on these children.

Second, once the cost and quality data collection had been completed, children were selected for developmental assessment as part of the developmental outcomes component of the study. Once a center and classroom teacher agreed to participate, consent forms and surveys were sent to the teacher to send home to parents of potentially eligible children. Up to 12 children could be selected from each classroom, in order not to overrepresent the results based on any one classroom. If more than 12 were eligible and parents consented, only 12 children were randomly chosen (although this happened on rare occasions).

Four criteria were applied for inclusion in the sample: 1) children were to be of an age to enter kindergarten in the fall of 1994 (about 4 years old by the spring of 1993); 2) children must have been enrolled in the class that was observed during the previous cost and quality data collection phase; 3) the children were expected to continue attending that center the following year; and 4) the primary language spoken in the child's home was English. The selected age range was to yield a cohort of children who would enter kindergarten in the same year (1994). The second criteria insured that children had experienced the treatment of interest (i.e., child care program quality) at the time it was measured. The third criteria attempted to ensure continuity in child care to minimize changes in the independent variable during the second year of preschool data collection. Speaking English was included as a criteria so that differences in treatment effects and the child outcome measures being used were not confounded with differences in the child's primary language and to insure that parents could read and understand the consent forms and parent questionnaires.

Table 3.5 presents information on the number of children assessed, their ethnicity and their mother's educational level. Expected state differences exist; for example, a higher proportion of Hispanic children were found in California and Colorado than in Connecticut and North Carolina, and a higher proportion of African-American children were found in North Carolina than in the other states. North Carolina mothers tended to be the least educated.

MEASURES AND PROCEDURES

Since this study was designed to explore three primary components in early childhood care and education programs, i.e.,cost, quality, and children's developmental outcomes, in-depth information was required to fully characterize each, as well as to determine the relationships among all three. For the cost component, the design of the study called for comprehensive financial data to be collected, as well as detailed information about the ECE program, including administrative style and management strategies used. For the quality component, data were collected on structural characteristics for both the overall center and individual classroom and process quality of the classroom. These data included ratios and group size, global measures of classroom quality, specific measures of adult-child interactions, types of children's activities, and teaching style. In addition, parent assessments of the quality of their children's early childhood programs were collected as well as their value ratings for the aspects of care they evaluated.

Data for the developmental outcomes component included individual child assessments, teacher ratings, and parent reports. Information was gathered from children about cognitive developmental status (verbal ability, pre-reading, and pre-math skills), their self-perceptions of competence, and attitudes about their child care environment. From teachers, we obtained ratings of the children's social skills and teacher-child relationship. From parents, we obtained demographic information about the children and families.

A complete list of all instruments used in the Cost, Quality and Child Development Outcomes in Early Care and Education Study is shown in Table 3.6.

DATA COLLECTION

Cost and Quality Component

For the cost and quality components of the study, data were collected by a team of six to eight data collectors in each state. Generally, teams were composed of people with experience in the early childhood community, and in Colorado, graduate students in economics, statistics and public policy, who also had some experience in working with children, were also included. Prior to the data collection, all team members completed an intensive week-long training session held in Boulder, Colorado. The session provided training on all measures that were used in the study. Both direct instruction and guided practice in using the measures in actual early childhood programs were provided. In addition to addressing accurate use of the data collection instruments, topics related to ensuring confidentiality, cultural sensitivity, and appropriate observer behavior were emphasized.

During training, an attempt was made to bring all observers to an acceptable level of reliability on all instruments. Upon completion of the training, observers were required to carry out one or more data collection practice sessions with their state site coordinators acting as group leaders to further ensure accurate data collection.

Inter-rater reliability in the use of the cost and quality instruments was assessed through both in-state and between-state tests at about mid-point in the data collection process. To assess reliability within each state, the site coordinators made visits with each observer and percent of agreement was calculated. When acceptable levels of agreement (approximately 80 percent) were not found, additional instruction in the use of the instruments was provided. For between-state reliability assessment, each of the four site coordinators traveled to one or two other states and was paired with at least three randomly selected observers. Reliability on the various measures used in the collection of data is reported in the discussion of each instrument.

Developmental Outcomes Component

For the child development outcomes component of the study, data collection was initiated after the majority of cost and quality data had been completed. Data for the outcomes component were gathered by a team of three to six assessors in each state. The assessors were individuals with some early childhood experience, and to the extent possible, were the same individuals who collected the costs and quality data. In cases where the same data collectors were used for both components, they did not visit classrooms for the outcomes phase on which they had performed the quality ratings in the first phase.

Project coordinators attended a three-day training session on the outcomes instruments held in Chapel Hill, North Carolina. In addition to training and practice on the individual assessment instruments, issues of confidentiality, logistics in data collection, and appropriate behavior were discussed. The project coordinators were then responsible for selection and training of assessors at their own site. The site coordinator at North Carolina was available to answer any questions about the procedures or scoring of items. Following training and practice, assessors were observed in a practice session by the project coordinator to insure that they were following the standardized procedures exactly and scoring properly. In cases where they were not, their errors were explained and they continued practicing and were observed again until they carried out the procedures correctly. Once data collection began, the site coordinator observed each data collector at least once on their third to fifth visit to verify that the procedures were still being followed appropriately. In addition, each assessor's data were checked frequently throughout the data collection process to be sure that proper administration and scoring procedures were being used. Training was also provided on the items on the parent and teacher surveys, so that assessors could answer any questions about these items by the classroom teachers.

FINANCES, VOLUNTEERS, STAFF AND PROGRAM CHARACTERISTICS

Data on center costs, revenue sources, subsidies, and center structure were collected to serve two purposes--to provide a description of center-based early childhood care and education, and also to provide the data base for the econometric model and other statistical analyses. Complete financial information was compiled for the most recent fiscal year using a questionnaire that was based on an instrument used in the Colorado Cost and Quality pilot study. The instrument was tested during the first months of this project with input from the project's advisory committee, consultants, and feedback from project staff in the four states. The final version of the questionnaire was a refined version of the original with new items of interest added. Table 3.7 shows the financial data collected for this study; the interview form is included in the Appendix.

This questionnaire was completed as part of an interview with the program director or another appropriate administrator. The interview generally lasted about two to three hours, although more time was required for extremely large or complex programs or for programs where adequate financial records had not been maintained. In many cases, project staff were required to follow-up with telephone conversations to ensure accuracy or to complete all items. In almost all cases, the interview with the director preceded the collection of all other data for a program.

Interviewers worked with directors to categorize expenses and revenues and to gather complete information on each site. Expenses were generally organized into the basic areas shown in Table 3.7: personnel, facilities, and program, including items related to salaries, benefits, any donated or contracted services, training, supplies and equipment, transportation, and food service. Revenue and support included fees, public revenue, other cash income as well as volunteer and donated support.

In addition, the interview included questions on program characteristics such as: total attendance, enrollment and capacity of the center; number of infants, toddlers, preschoolers, and school-aged children; number of minority or publicly subsidized children; operating hours; ownership status; fee schedule by age of child; hours of operation; source of payment. Data were also collected on staff characteristics, staffing patterns, and benefits such as number of staff, education, experience, benefits, salaries, inservice training and ongoing education, and the quality of the adult work environment.

During the interview, data on standard structural measures of quality were collected: staff ratios (full-time equivalent [FTE] teachers or teachers and assistants per FTE child by age level), education, experience, seniority in the center of each staff member, and classroom space per child. Some nonstandard structural measures were also collected: cost or value of inservice training for staff members; number, hours volunteered, qualifications, and dollar value and assignments of volunteers. Data were also collected on some attributes of services that were easy to observe, such as the overt condition of the building in which the program was housed and the square footage of the indoor and the outdoor space used by the children.

CENTER AND CLASSROOM QUALITY

Once the interview with the director had been completed, two observers visited the program to collect data on classroom quality and to distribute questionnaires for teaching staff and parents. Neither of the observers had acted as the data collector during the interview with the director. These observers spent an average of six hours in the center during a one-day visit. An observer would begin data collection in one classroom and then periodically move to the other classroom for crossover observations. Crossover observations were used to reduce the effect of observer characteristics on observation data for each classroom.

Global Quality of Care

Two well-established global measures of child care process were used to assess process quality, the Early Childhood Environment Rating Scale (ECERS) (Harms and Clifford, 1980) and its infant-toddler version, the Infant/Toddler Environment Rating Scale (ITERS) (Harms, Cryer & Clifford, 1990) which have been widely used in child development research (Phillips, 1987; Howes, Phillips & Whitebook, 1992; Culkin, Helburn, & Morris, 1990). These scales comprehensively assess the day-to-day quality of care provided for children. The ECERS was used for data collection in preschool-aged groups where the majority of children in the class were 30 months or older; the ITERS was used for groups where the majority of children were under 30 months of age.

The ECERS is a 37-item scale organized under seven categories: personal care routines, furnishings and display for children, language-reasoning experience, fine and gross motor activities, creative activities, social development, and adult needs. It is designed to be used in one room at a time for groups of children two through six years of age. Each of the 37 items is presented as a seven point scale with quality descriptors under one (inadequate), three (minimal), five (good), and seven (excellent). Scoring is based on observation, as well as answers to questions about any aspects of the program that were not observed during the visit.

In an inter-rater reliability study conducted in 25 classrooms, two independent ratings were obtained and compared, giving a rank order correlation of total scale scores of .88 (Harms and Clifford, 1983). Comparable inter-rater reliabilities have since been reported in other studies (McCartney et al., 1984; Whitebook et al., 1990). A test retest reliability of .96 with a two-week interval between first and second testing resulted from a study of 31 rooms. The internal consistency of the scale as a whole is quite acceptable with Alphas ranging from .81 to .91 in four studies (Harms & Clifford, 1980, 1983).

The validity of ECERS has been substantiated in several ways. First, ratings of all the scale items by seven nationally recognized experts resulted in 78% of the items being rated as of "high importance" and only one percent as "low importance" on a three-point scale. Second, a comparison of expert opinions with scale scores resulted in a correlation of .74 (Harms & Clifford, 1983). Finally, considerable evidence from studies documenting the relationship of ECERS scores to child outcomes measures and teacher process variables attests to its validity (Harms & Clifford, 1983; McCartney et al., 1984; Goelman & Pence, 1987; Whitebook et al., 1990).

The ITERS is a similar instrument designed for center-based care for children from birth through 30 months of age. Reliability and validity data are reported extensively in reliability and validity reports (Harms et al., 1990; Clifford et al., 1990). The Spearman correlation coefficient for inter-rater reliability in 30 child care center rooms was .84; test retest reliability after three to four weeks in 18 rooms was .79 for the overall scale; internal consistency measured by Cronbach's Alpha was .83 for the overall scale. Three validity studies were also conducted with very good findings. Minor revisions were made for clarification on a few items following the reliability and validity studies.

In most programs, one observer completed the ECERS in a classroom for preschoolers while a second observer completed an ITERS in a classroom for younger children. Where programs did not provide services to two age groups, two ECERS or two ITERS classrooms were observed; when only one classroom was present, then the appropriate instrument was completed. Observers generally completed the assessments from about 9:00 AM until about 3:00 PM, working on the ECERS or ITERS while completing other instruments required by the study. Pearson correlation coefficients were calculated for ECERS and ITERS total scores. For this study, inter-rater reliability for the ECERS ranged from .83 to .98 with a median of .94. ITERS reliabilities ranged from .74 to .97 with a median of .97.

In factor analyses of ECERS and ITERS data collected for this study, one overall factor of general early childhood quality was found for each instrument (ECERS and ITERS). This same factor was also reported for both scales by Scarr (Scarr, 1993). In addition, however, our data support two highly related ECERS factors (Appropriate Caregiving and Developmentally Appropriate Activities) which are very similar to those reported in the National Child Care Staffing Study (Whitebook et al., 1990). Our data also provide support for three highly related factors for the ITERS (Provisions of Furnishings and Materials, Interactions, and Basic Caregiving Routines). All factors have good internal consistency. Table 3.8 shows the items contained in each factor and item loadings.

Teacher Sensitivity and Attachment

In addition to the ECERS and ITERS, several instruments specifically designed to measure teacher involvement and teaching style were used. Following completion of the ECERS or ITERS, each data collector rated the ITERS/ECERS teachers they had observed using the Caregiver Interaction Scale (Arnett, 1989). This measure yields four scores: sensitivity (warm, attentive, and engaged); harshness (critical, threatens children, and punitive); detachment (low levels of interaction, interest, and supervision) and permissiveness. Scores from this instrument have been found to predict child care teacher's involvement with children and the children's language development and attachment security (Whitebook et al., 1990).

The Caregiver Interaction Scale scale was found to have good inter-rater reliability and validity in two recent studies (Whitebook et al., 1990; Love, 1991). In the National Child Care Staffing Study, the Caregiver Interaction Scale was found to have inter-rater reliability of .89 across all sites (Whitebook et al., 1990). Whitebook reports that the Caregiver Interaction Scale was found to discriminate in reasonable ways between centers included in the large scale studies. For this study, reliabilities for the Caregiver Interaction Scale were: Sensitivity median r=.95 (range= .90 to .98); Harshness median r= .92 (range= .89 to .96); Detachment median r= .93 (range= .90 to .95); Permissiveness median r= .92 (range= .89 to .94).

Child-Centered Emphasis

In the preschool classes where the ECERS was completed, the UCLA Early Childhood Observation Form was also used. In prior work this measure differentiated between didactic, structured, and child-centered preschool programs. Children in didactic versus child-centered programs differed in social motivational development (Stipek, Daniels, Galuzzo & Milburn, 1992). The UCLA Early Childhood Observation Form has five subscales. Inter-observer reliabilities for these subscales were: Child initiation median r= .92 (range= .83 to .95); Academic emphasis median r= .94 (range= .86 to .97); Discipline median r= .91 (range= .83 to .94); Performance pressure median r= .88 (range= .81 to .93); Negative evaluation median r= .95 (range= .89 to .97).

Teacher Involvement

During the crossover observations, data collectors randomly selected two target children, a girl and a boy, for three focused observations of five minutes each. The Teacher Involvement Scale (Howes and Stewart, 1987) was used to code how teachers interacted with the target children during these focused observations. The six-point Teacher Involvement Scale allowed the observer to code the nature of a teacher's involvement with the child every 20 seconds whenever a teacher was within three feet of the target child. Scale points ranged from ignore, to routine (touches the child for routine care such as feeding or toileting, without any verbal interaction) to minimal, then simple, elaborative, and finally intense (engaging a child in conversation or actively playing with the child).

The Teacher Involvement Scale has been found to predict child developmental outcomes (Howes & Stewart, 1987; Whitebook et al., 1990). Specifically, it has been found to differentiate between children who behave as if they are securely or insecurely attached to their caregivers (Howes & Hamilton, 1992). Children who are securely attached to their caregivers are more likely to demonstrate social competence with peers (Howes, Matheson & Hamilton, 1994). The Howes Teacher Involvement Scale had an inter-rater reliability of .92 in the National Child Care Staffing Study (Whitebook et al., 1990). For this study, the median kappa = .92 (range .83 to .96).

Level of Children's Play

In conjunction with collecting data on teacher involvement with the Teacher Involvement Scale (Howes & Stewart, 1987), data on level of children's play were collected using the Peer Play Scale (Howes, 1980). The Peer Play Scale (Howes & Matheson, 1992) is used to assess the complexity of children's play with peers. Play with peers is coded in increasing levels of complexity from unoccupied behavior through simple exchanges to complex social pretend play. Test re-test reliability of the Peer Play Scale is .91 over four weeks and .34 over one year. Inter-observer reliability of the scale in the current study was median kappa= .92 (range=.83 to .96). The Peer Play Scale can be used as an index of social competence. In a prior study it was found that children enrolled in lower quality child care centers played in less complex ways than children in model child care centers (Howes & Matheson, 1992). The two randomly selected target children in each classroom were observed during three five-minute periods while they were relatively free to interact with their peers. Children's level of social play was coded every 20 seconds during each five-minute period.

Staff to Child Ratios/Group Size

Information required to calculate staff to child ratios and group size was collected five times throughout the observation day in the sampled classrooms. Observers collected the required information during periodical crossovers into other classrooms. Data on numbers of children and staff present were collected upon arrival in an observed group, and then approximately every hour thereafter for four more observations. The time of each observation and whether it was indoors or outdoors was noted for each. First observations were generally made at about 8:00-9:00 AM while the last observations were made at about 2:00-3:00 PM.

Type of Child Activity

In an attempt to document what children's typical days were like in early childhood programs in the four states, information about the type and nature of activity in which preschool-aged children were involved was also collected when staff to child ratios were recorded. The Spanish instrument, Observations of Activities in Preschool (OAP) (Palacios and Lera, 1991), was translated and adapted for use in the United States. Using this instrument during the five hourly observations, data collectors coded various aspects of the activities in which one of the two target children took part, including the teacher's role in the activity, the teacher-child relationship, the social organization of the child, the type of activity in which the child was involved, the content area into which the activity could be classified, and the form of expression the child used during the activity. In addition, the arrangement of the space and furnishings in the classroom was coded.

STAFF SURVEY

To supplement data collection about staff characteristics, all staff in observed classrooms were asked to complete staff questionnaires. These were generally distributed to staff during the morning of the classroom observation day and collected after all quality assessments had been completed. The staff questionnaire was used to collect information about staff demographics, such as marital status, race, and age; data related to child care as a staff benefit; hours worked and wages/income; child care experience and training; and job satisfaction. The questionnaire was adapted from the staff questionnaire used in the National Child Care Staffing Study (Whitebook, et al., 1990).

EVALUATION OF CENTER ADMINISTRATION

Data on the quality of leadership at each center was collected through two versions of an Administrative Questionnaire (Culkin, 1993a; Culkin, 1993b). One version was completed by the program's director and one by lead teachers in the observed classrooms. The director was asked to complete the Administrative Questionnaire at the end of the Director Interview. The teacher versions of the Administrative Questionnaires were generally collected after the classroom observations had been completed.

The instrument was designed to gather data about the administrator's effectiveness in performing administrative duties. Both instruments included eleven similar content questions about the work of the administrator viewed from her/his own perspective or from that of the teachers in the observed classrooms. The director's version of the Administrative Questionnaire included additional questions about the administrator's professional and educational background. The two questionnaires were based on a qualitative study that isolated variables describing the work of ECE administrator/leaders (Culkin, 1994). These variables were then used in the development of the eleven content questions. The content questions reflected nine domains of the administrator's work. While organizational structures may vary, most directors have responsibilities in these domains. The domains are:

1. Acting as leader;
2. Acting as follower;
3. Communicating with staff and children, families, and community;
4. Gathering resources, including financial and other resources;
5. Teaching, learning, explaining;
6. Modeling appropriate practice in early care and education;
7. Managing the domains of administration, policy, and service;
8. Managing quality process; and
9. Carrying the mission forward/renewing.

The same eleven question topics about the work of the administrator were used in both questionnaires. In the teacher's version of the instrument, teachers rated their administrator; and in the administrator's version, the administrators rated themselves.

Reliabilities for the two versions of the instrument were calculated using Cronbach's Alpha. For the teacher's measure the Alpha score for raw variables was .72 and on standardized variables .73. For the director's version, the Alpha score was .53 for raw variables and .54 for standardized variables.

A factor analysis of the data from the 733 Teacher Administrative Questionnaires was completed. A four-factor solution indicated that the administrator's work can be thought of as reflecting four constructs or factors. The first factor, Early Childhood Program, reflects the administrator's work with the children and teachers pertaining to basic organization, communication within the center, curriculum, and the distribution of resources. This factor appeared to reflect what is generally thought of as the administrator's most significant job, that is, to work with the educational program and the teachers. The second factor, Work With Community, included questions related to the administrator's work with the community outside the program. The third, Work With Families, pertained to the administrator's work with families at the time of enrollment and during their child's enrollment in the program. The fourth factor, Financial Management, stood alone as a single item, perhaps reflecting its perceived or actual unrelatedness to the other more programmatic factors. This analysis suggests that there is more than just one administrative dimension to the work of the childcare administrator.

Values and Evaluations

A parent questionnaire was developed and used to collect information on how parents valued aspects of child care which are associated by professionals with child care quality and also to determine parents' assessment of the quality of their children's classrooms (Cryer, 1994). These were distributed by the teachers in the observed classrooms and parents either returned them to the teachers in sealed envelopes or applied postage and dropped the self-addressed envelope into a mailbox. The teachers mailed all returned questionnaires to the project office in Denver. Parents' participation in the study was voluntary, based on whether they chose to return questionnaires.

Those parents with children in classes where the majority of children were of preschool age (30 months or older) were asked to complete the Early Childhood Environment Rating Scale Parent Questionnaire (ECERSPQ), derived directly from items on the ECERS. Parents with children in rooms where the majority of children were less than 30 months of age were asked to complete the Infant/Toddler Environment Rating Scale Parent Questionnaire (ITERSPQ), derived directly from items on the ITERS. For both questionnaires, the ECERS and ITERS item content was extracted and presented in a simplified form at a lower reading level. The questionnaire for parents of preschool-aged children consisted of 48 classroom-related items and 16 demographic items. The questionnaire for parents of infants/toddlers consisted of 45 classroom-related items and the same 16 demographic items. For California, a Spanish translation of the instrument was distributed to parents who used Spanish as a primary language.

To measure parental values for aspects of child care, parents were asked to indicate the importance of each item on the questionnaire, using a three-point scale, with one indicating not important and three, very important. To collect data on how parents judge the care their children receive, they were asked to indicate the quality of their child's classroom on each item, using a seven-point scale, with one indicating not well and seven, very well. Parents were also able to choose don't know, represented by zero, in their ratings of classroom quality.

A limited field test to examine the relationship between the parent questionnaires and the original rating scales was completed. When pairs of data collectors, who had been trained in the use of the ECERS and ITERS, observed in the same classroom it was found that the scores from the original instruments were highly correlated with the scores from the respective parent questionnaire versions. Total ECERS and ECERSPQ instruments had a Pearson Correlation Coefficient of .81; ITERS and ITERSPQ, .96. The versions of the ECERS and ECERSPQ that excluded the Adult Needs sections and Exceptional children items had a Pearson Correlation Coefficient of .79; ITERS and ITERSPQ, .95. There were no significant differences when total ECERS scores were compared with ECERSPQ [t(10) = 1.32 p = .22] scores nor were significant differences found when total ITERS and

ITERSPQ scores [$t(6)=.-2.40$ $p=.053$] were compared.

CHILD DEVELOPMENT DATA

Data for the developmental outcomes component included individual child assessments, teacher ratings, and parent surveys. These data were collected after the cost and quality data were gathered, primarily in the summer of 1993. Consent forms and parent surveys were sent home with the child and returned to the teacher. Parents were given envelopes to seal the completed surveys in before returning them. Once consent forms were returned and children were determined to be eligible for the study, a visit was set up with the child care center.

Each child was seen individually at the child care center for about 30 minutes to administer the assessment instruments. After children were assessed, they were each given a book to bring home as thanks for their participation in the study. Once the assessments were completed in a classroom, rating scales were left with the teacher. Stamped, self-addressed envelopes allowed teachers to return the forms to the investigators. Once the questionnaires were received by the investigators, teachers were paid $5.00 per child for the forms they completed in appreciation of their time.

Verbal Ability

As part of the individual assessments, the Peabody Picture Vocabulary Test-Revised, PPVT-R, (Dunn & Dunn, 1981) provided a measure of receptive language comprehension. This instrument is designed for use from age 2-1/2 to adulthood, and the format is appropriate for young preschool age children, requiring them to point to the picture that matches the word spoken by the examiner. PPVT-R raw scores are converted into standard scores based on age with a mean of 100 and a standard deviation of 15, derived from a national standardization sample.

Pre-Academic Skills

The reading and math subscales of the Woodcock-Johnson Tests of Achievement, WJ-R, (Woodcock & Johnson, 1989, 1990) were used to measure children's achievement in these domains. The two tests used on the reading subscale were letter-word identification and passage comprehension, and the two tests used on the math subscale were calculation and applied problems. These tests are designed to be used with 2-year-olds to adults. Raw scores were converted into standard scores based on age with a mean of 100 and a standard deviation of 15, based on a national standardization sample. At young ages, the chosen subtests (reading and math) are measures of pre-reading, pre-literacy and numeracy skills.

Self-Perceptions and Attitudes

For the third assessment measure, children's self-perceptions were obtained by administering a revised version of The Attitudes/Perceptions of Competence (Stipek, 1993). For this measure, children chose one face from five, ranging from negative to positive expressions, that best described their thoughts or feelings about particular situations. This instrument measures four domains: children's perceptions of competence, concerns about preschool, feelings about their teacher, and attitudes toward school. Eight of the original 16 questions were used, including two questions from each domain. In pilot testing the full instrument was determined to be too long for children in this age range.

Social Development

The teachers were asked to rate the children's behavior using the Classroom Behavior Inventory (CBI; Schaefer, Edgerton, & Aaronson, 1978). This instrument measures teacher perceptions of children's verbal intelligence, curiosity and creativity, and social adjustment, across 10 scales. Forty-two items are rated for how typical they are of the child, using a 5-point scale (not at all, very little, somewhat, much, and very much like). Internal consistency reliabilities for the CBI are good (.83 - .96) and 4-month test-retest correlations range from .63 - .89 for the 10 scales.

For purposes of analysis, the 10 CBI scale scores were factor analyzed, resulting in three factors that accounted for 76% of the variance. These factors replicated other factor analyses of the CBI, yielding a positive behavior factor, a sociability/extroversion factor, and a problem behavior-acting out factor. The positive behavior factor consisted of the Creativity, Independence, Task Orientation, and Verbal Intelligence scales loading positively, and the Dependence and Distractibility Scales loading negatively. The sociability factor included the Extroversion scale loading positively and the Introversion Scale loading negatively. The problem behavior factor consisted of the Distractibility, Hostility, and Consideration Scales, with Consideration loading negatively on the factor.

Teacher-Child Relationship

Second, teachers completed the Student-Teacher Relationship Scale (STRS; Pianta, 1992; Pianta & Steinberg, 1992) for each child. This instrument contains a series of questions rated on a 5-point scale, which yield a measure of the teacher's impression of the teacher-child relationship on five subscales. The scores on this measure are moderately correlated with measures of teachers' ratings of children's classroom behavior, with the relationships with children who were ultimately not promoted to the next age-group in school rated as more conflicted and less open than relationships with non-retained children.

The five subscale scores from this instrument were factor analyzed, and two summary factors were determined for analysis purposes, accounting for 65% of the variance. These factors represented global positive and negative teacher-child relationships as reported by the teacher. The positive factor included the Open Communication and Warmth subscales. The negative factor involved the Anger, Dependency, and Troubled Feeling subcales.

Parent Information

Demographic information was obtained from the parents of participating children. In addition to demographic information on each child in the study (name, race, gender, birth date), information about parental education and plans for the child's preschool attendance the following year was also gathered. The birth date and preschool attendance information were used for determining the child's eligibility for the study (i.e., entering kindergarten in 1994 and planning to attend the same child care center the following year).

Chapter 3 Appendix

Tables

Table 3.1 Comparisons of State Regulations

Table 3.2 Frequency Distribution of Early Childhood Programs Included in Sample by Profit Status

Table 3.3 Response Rates and Tests of Response Bias by State and Sector

Table 3.4 Participation Rates for Child Outcomes Assessment: Centers, Parent, and Children, and Teachers

Table 3.5 Description of Child Outcomes Sample

Table 3.6 Data Collection Instruments Used for Cost, Quality and Child Development : Outcomes in Early Childhood Care and Education Study

Table 3.7 Financial Data Collected for the Cost Component of the Study

Table 3.8 ECERS and ITERS Factors

Table 3.1
Comparisons of State Regulations

	CA	CO	CT	NC
SIZE				
State Population (1992)	30.9 mil.	3.5 mil.	3.3 mil.	6.8 mil.
Percent of National Population	12.10%	1.36%	1.29%	2.68%
State Population in Rank	1	26	27	10
City Population (1991)	9.0 mil.	2.4 mil.	1.1 mil.	1.3 mil.
PERSONAL INCOME (1992)				
Per Capita	$21,278	$20,124	$26.979	$17.667
National Rank	10	17	1	33
Percent of National Average	107%	101%	136%	89%
STATE LICENSING STANDARDS:				
Minimum Adult-to-Child Ratio (1)				
for infants	1:4	1:5	1:4	1:6
for 3 year olds	1:12	1:10	1:10	1:15
for 4 year olds	1:12	1:12	1:10	1:20
for 5 year olds	1:12	1:15	1:10	1:25
Group Size				
age 1	not regulated	10	8	14
age 3	not regulated	not regulated	20	25
Space (inside sq ft/child in centers)				
infants	35	50	35	25
toddlers	35	45	35	25
others	35	30	35	25
MINIMUM TEACHER ECE TRAINING				
Director	12 credits ECE classes & 3 cred., admin; Center permit if subsidized	24 credits ECE classes, 24 months experience	1 year supervised exper. & CDA cert. (or 12 credits ECE or child development, or 1 addtl year experience)	2 yr ECE experience;
Teacher (group leader)	12 credits ECE classes	12 credit hours ECE, & 9 months experience; or 3 yrs. experience.	Teacher: High school or equivalent & ability to work under supervision	no preservice requirements. (10 hours orientation, 20 clock hrs/yr inservices training (2))
Assistant (aide)	none	none	High School or equivalent	none
CRIMINAL RECORD CHECK	yes	yes	yes	no
CHILD ABUSE CHECK	yes	yes	yes	yes
PARENT VISITATION RIGHTS	yes	yes	yes	no
MONITORING OF CENTERS	1 unannounced visit per year	1 unannounced visit/ 2 years; unannounced investigation of complaints	1 unannounced visit/ 2 years; unannounced investigation of complaints	1 announced visit/year; unannounced investigation of complaints

1: These age groupings were chosen for purposes of comparison because these ratios are reported in all 4 states.

2: Not required if teacher or assistant has four year college degree.

Sources: Colorado Licensing regulations 1990
Who Cares for America's Children, 1990
North Carolina license regulations, 1991
Connecticut Licensing Regulations, 1991
Updated by Telephone

Table 3.2

Frequency Distribution of Early Childhood Programs Included in Sample by Profit Status

State	Nonprofit	For-Profit	Total
	N	N	N
CA	52	48	100
CO	50	50	100
CT	49	52	101
NC	50	50	100
Total	201	200	401

Table 3.3

Response Rates and Tests of Response Bias by State and Sector

		CA	CO	CT	NC
CENTER CONTACTS AND RESPONSES					
Number of Yes Contact Sheets		94	100	97	101
Number of No Contact Sheets		119	48	45	145
Number of Ineligible Contact Sheets		88	66	43	36
Percent of Centers Which Agreed		44%	68%	68%	41%
SECTOR RESPONSE RATE	N	211	141	142	194
	t-stat	3.22**	0.2	0.91	1.73
Non Profit	%	58%	71%	65%	59%
For-profit	%	36%	70%	72%	47%
GEOGRAPHIC BIAS:	X^2	21.7*	9.14	7.73	12.26
	Df	10	9	5	15
YEAR CENTER BEGAN	N	212	136	N/A	188
	t-stat	0.33	0.36	N/A	0.09
Participating Centers	Mean	1977.1	1982.9	N/A	1980.7
Refused	Mean	1977.6	1983.4	N/A	1980.5
LEGAL CAPACITY	N	209	140	140	187
	t-stat	3.33**	0.47	0.94	1.75
Participating Centers	Mean	88	89	56	98
Refused	Mean	64	101	51	83
CURRENT ENROLLMENT	N	208	136	N/A	189
	t-stat	3.86**	0.48	N/A	1.91
Participating Centers	Mean	79	90	N/A	82
Refused	Mean	53	81	N/A	67
DOES CENTER SERVE INFANTS?	N	212	140	139	193
	t-stat	2.41**	1.71	1.62	0.426
Participating Centers	%	25%	29%	48%	74%
Refused	%	13%	16%	33%	71%
DOES CENTER SERVE TODDLERS?					
	t-stat	0.06	1.01	1.55	0.63
Participating Centers	%	47%	70%	65%	84%
Refused	%	47%	62%	51%	87%
DOES CENTER SERVE PRESCHOOLERS					
	t-stat	1.24	0.54	0.98	1.17
Participating Centers	%	96%	97%	98%	98%
Refused	%	99%	100%	100%	100%
DOES CENTER SERVE SCHOOL-AGED CHILDREN?	t-stat	0.84	0.43	0.518	0.99
Participating Centers	%	98%	89%	45%	72%
Refused	%	59%	86%	40%	66%

* significant at the 5% level
** significant at the 1% level
Percentages vary slightly because of missing and zero values

Table 3.4

Participation Rates for Child Outcomes Assessment: Centers, Parent, and Children, and Teachers

	CA	CO	CT	NC	TOTAL
CENTERS					
No. Centers Agreed to Participate in Follow-up	43	50	44	44	181
Percent Profit	34	50	58	42	46
Percent Non-profit	66	50	42	58	54
Percent Centers with > 50% Subsidized Children	7%	29%	21%	19%	19%
PARENTS AND CHILDREN					
No. Consent Forms Received by Researchers	240	241	214	266	961
No. Children Assessed	218	205	204	199	826
No. Parent Surveys Returned	217	203	191	196	807
Parent Survey Return Rate	99%	99%	94%	98%	98%
TEACHERS					
No. Teacher Questionaires Returned	218	201	198	178	795
Teacher Questionaire Return Rate	100%	98%	97%	89%	96%

Table 3.5

Description of Child Outcomes Sample

	CA	CO	CT	NC	TOTAL
NO. CHILDREN ASSESSED	218	205	204	199	826
CENTER ATTENDANCE BY AUSPICE:					
For-profit	35.8%	51.2%	56.7%	35.9%	44.8%
Non-profit	64.2%	48.8%	43.3%	64.1%	55.2%
CHILD GENDER:					
Girls	47.2%	50.7%	42.9%	52.3%	48.3%
Boys	52.8%	49.3%	57.1%	47.7%	51.7%
CHILD ETHNICITY:					
White	54.9%	73.8%	78.7%	65.6%	67.9%
Black	11.7%	3.5%	13.3%	33.3%	15.3%
Hispanic	4.7%	13.9%	3.2%	0%	5.5%
Asian	12.2%	1.5%	0.5%	0%	3.8%
Other	16.4%	7.4%	4.3%	1.0%	7.5%
MOTHER'S EDUCATIONAL LEVEL:					
Less Than High School	0.9%	2.5%	1.6%	4.7%	2.4%
High School Degree	9.4%	14.2%	19.6%	24.4%	16.7%
Some College	45.3%	43.2%	39.7%	46.6%	43.8%
Less Than Bachelor's	55.6%	59.9%	60.9%	75.7%	62.9%
Bachelor's Degree	18.9%	20.8%	17.9%	14.5%	18.1%
Some Graduate School	10.9%	9.1%	9.2%	3.6%	8.3%
Master's Degree	11.8%	7.1%	10.3%	4.2%	8.4%
Doctoral Degree	2.8%	3.1%	1.6%	2.1%	2.4%
Bachelor's or Above	44.4%	40.1%	39.0%	24.4%	37.2%

Table 3.6

Data Collection Instruments Used for Cost, Quality and Child Development Outcomes in Early Childhood Care and Education Study

1. Telephone Contact Sheet: Used to collect data on all programs contacted, whether or not they consented to take part in the study. Data used to insure representative nature of population included in study.
2. Director's Interview with Optional Worksheets. Used to collect information from Program Administrator about structural aspects of the program as well as detailed financial information. (Cost Component)
3. Director's Administrative Questionnaire. Used to assess the director's perception of own administrative style and characteristics. (Cost Component)
4. Teacher's Administrative Questionnaire. Used to assess the teacher's perception of director's administrative style and characteristics. Distributed to lead teachers in classrooms observed. (Cost Component)
5. Staff Questionnaire. Used to collect information about staff demographics, such as training, experience, wages, etc. Distributed to all staff working in observed classrooms. (Cost Component)
6. Early Childhood Environment Rating Scale (ECERS, Harms and Clifford, 1980). Used to assess global process quality in all observed classrooms where majority of children were two and one half years of age or older. (Quality Component)
7. Infant/Toddler Environment Rating Scale (ITERS, Harms, Cryer & Clifford, 1990). Used to assess global process quality in all observed classrooms where majority of children were less than two and one half years of age. (Quality Component)
8. Caregiver Interaction Scale (Arnett, 1989). Used in all observed rooms to assess characteristics of teacher-child interactions. (Quality Component)
9. UCLA Early Childhood Observation Form (Stipek, Daniels, Galuzzo & Milburn, 1992). Used to assess degree of child-centeredness in all observed classrooms where majority of children were two and one half years of age or older. (Quality Component)
10. Observations of Activities in Preschool (Palacios and Lera, 1991). Used to collect ratios and group size information in all groups observed. The complete instrument was used to assess the character of the day for children in all observed rooms where majority of children were two and one half years of age or older.
11. Teacher Involvement Scale (Howes and Stewart, 1987). Used in all observed rooms to assess nature and intensity of adult interactions with children. (Quality Component)
12. Peer Play Scale (Howes, 1980). Used in all observed rooms to assess level of child social play. Three observations of five minutes each were completed in each observed room on one boy and one girl whose birth dates were closest to January 1. (Quality Component)
13. ECERS Parent Questionnaire. Used to collect information on parental values for ECERS requirements and perceptions of how well their child's class met the requirements. Distributed in all observed classrooms where majority of children were two and one half years of age or older. (Quality Component)
14. ITERS Parent Questionnaire. Used to collect information on parental values for ITERS requirements and perceptions of how well their child's class met the requirements. Distributed in all observed classrooms where majority of children were less than two and one half years of age. (Quality Component)
15. Peabody Picture Vocabulary Test-Revised, Form L (Dunn & Dunn, 1981). Used to collect data on child language ability. (Child Development Outcomes Component)
16. Woodcock-Johnson Tests of Achievement-Revised, Form A, (Woodcock & Johnson, 1989, 1990). Used to measure pre-reading and pre-math skills. (Child Development Outcomes Component)
17. Attitudes/Perceptions of Competence (Stipek, 1993). Used to collect information about children's self-perceptions of competence and attitudes toward child care. (Child Development Outcomes Component)
18. Teacher Survey. Used to collect information on children's social skills from the Child Behavior Inventory (CBI; Schaefer & Edgerton, 1976) and the Student-Teacher Relationship Scale (STRS, Pianta, 1992, Pianta & Steinberg, 1992). (Child Development Outcomes Component)
19. Parent Survey. Used to collect basic demographic information about participating children and their families. (Child Development Outcomes Component)

Note: Other forms used by sites, such as informed consent forms, are not included as part of this list.

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Table 3.7
Financial Data Collected for the Cost Component of the Study

COSTS AND INKIND SUBSIDIES

Labor cost

Salaries
- Director
- Assistant Director
- Secretary
- Teachers (individual)
- Assistant Teachers (individual)
- Substitutes (total)
- Bookkeeper
- Specialist (individual)
  - Social worker
  - Nurse, etc.
- Other

Total fringe benefits/payroll tax
- FICA/PERA
- Unemployment insurance
- Worker's Comp.
- Health/dental insurance
- Life insurance
- Disability insurance
- Other

Contracted services
- Accounting
- Legal
- Work Study
- Other

Donated services
- Program volunteers
- Administrative services
- Professional services
- Other services

Facility cost

Cash costs
- Rent/mortgage
- Taxes
- Gas and electric
- Telephone
- Water and sewer
- Trash
- Lawn and snow
- Janitor
- Cleaning supplies
- Maintenance

Donated building services
- Building space
- Maintenance services
- Utilities

Food Service Cost

Cash costs
- Food purchased
- Food service wages
- Food service supplies
- Other

Donated food

Insurance

Cash costs

Donated insurance

Program cost

Supplies/materials
- Office supplies
- Program supplies

Equipment
- Lease
- Purchase
- Repair
- Depreciation

Transportation
- Vehicle purchase or lease
- Prog. mileage cost
- Admin. mileage cost

Staff Development

Overhead to central office

Donated supplies and equipment

REVENUE AND CASH SUBSIDIES

Fees

- Parent fees
- Public fees

Other public revenue

- State funds/grants
- Municipal, county
- USDA Food Program
- Federal grants
- Other federal funds

Other contributions

- Fund raising events
- United Way
- Foundations
- Organization support (e.g., church)
- Individual gifts

Miscellaneous

- Interest income
- Property income
- Other

Table 3.8

ECERS and ITERS Factors

ITERS		ECERS	
FACTOR AND ITEMS	**LOADINGS**	**FACTOR AND ITEMS**	**LOADINGS**
1. Provisions for Furnishings and Materials		1. Appropriate Caregiving	
furnishings for routine care	0.40	greeting/departing	0.54
use of furnishings for learning	0.54	meals/snacks	0.49
furnishings for relaxation and learning	0.63	nap/rest	0.49
display for children	0.63	diapering/toileting	0.46
informal use of language	0.42	personal grooming	0.41
books and pictures	0.58	understanding language	0.58
eye-hand coordination	0.57	using language	0.68
active physical play	0.43	reasoning	0.62
art	0.69	informal use of language	0.73
music and movement	0.53	fine motor	0.50
blocks	0.52	supervision of fine motor	0.68
pretend play	0.66	gross motor space	0.42
sand and water	0.54	gross motor equipment	0.46
cultural awareness	0.53	supervision of gross motor	0.63
schedule	0.48	music/movement	0.43
		schedule for creative activities	0.59
2. Interactions		supervision of creative activities	0.71
nap	0.55	free play	0.62
informal use of language	0.65	group time	0.50
peer interaction	0.74	tone	0.76
adult-child interaction	0.71		
discipline	0.74	2. Developmentally Appropriate Activities	
schedule	0.50	furnishings for learning	0.73
		furnishings for relaxation and comfort	0.57
3. Basic Caregiving Routines (Protecting Health and Safety)		room arrangement	0.65
meals and snacks	0.61	child related display	0.59
diapering/toileting	0.70	understanding language	0.54
personal grooming	0.66	using language	0.44
health practice	0.74	reasoning	0.45
safety practice	0.55	fine motor	0.55
		art	0.70
		blocks	0.68
		sand/water	0.55
		dramatic play	0.53
		schedule for creative activities	0.50
		space to be alone	0.56
		free play	0.54
		group time	0.49
		cultural awareness	0.49

Part 2

Introduction

This Part describes the characteristics of the centers studied for each of the domains identified in the circles in Figure 2.1 and listed in Table 2.1. Mean values of variables are reported for the whole sample, by state (more accurately, by regions within each state), and within states by for-profit and nonprofit sector. This introduction briefly describes each chapter and the analytic procedures used to test for differences in center characteristics by state, sector, and scope of the program. Finally, it summarizes major findings by chapter.

PART 2 OUTLINE

Chapter 4 describes general center characteristics represented by the Center Structure circle in Figure 2.1. These include how long the program has been in existence, the profit status of the center, the number of children served, the age groups served, hours open, types of programs provided, types of special services provided, type of curriculum followed, ethnic composition of children and staff, parent involvement, accreditation, use of volunteers, administrator's background, teacher evaluation of the administrator's effectiveness, and the inside and outside square feet per child provided (the Capital Facilities circle).

Chapter 5 provides summary information on personnel policy, an important aspect of the Center Structure circle. It gives summary statistics on staff wages, wage increases, nonwage benefits, working conditions, foregone earnings, training, and staff turnover rates. It also summarizes information from the Staff Questionnaire on some of the above variables and on staff personal, family and work background. Finally, it provides an estimate of the cost to centers of raising teacher wages to levels recommended by the ECE profession.

Chapter 6 describes characteristics related to the Classroom Structure, and Classroom Process Quality circles in Figure 2.1. This includes both center and room level staffing ratios, classroom group size, staff education, staff training, staff tenure at the center, and staff experience in early care and education. It also includes information related to process quality: quality index scores, ECERS scores, ITERS scores, peer interaction scores, and teacher-child interaction scores. Finally, it summarizes results related to classroom organization, types of classroom experiences, and the degree of academic emphasis.

Chapter 7 investigates the relation between levels of staff education/training and job titles. Since the educational job qualifications for job titles in ECE centers are not uniform, this chapter looks at the extent to which the apparent job ladder in ECE from assistants or aides to teachers, to teacher-directors, to administrative directors actually conforms to increasing amounts of education and specialized training.

Chapter 8 summarizes data related to the Finances circle on costs, supply subsidies, fees, revenues, surpluses or d[illegible]cits, and the full cost of care. This includes a breakdown of sources or revenue, types of production costs, total production costs, the types and value of supply subsidies, full cost of care, and the costs to parents. It also summarizes information on fees, fee policy, and staff time spent raising funds from the community. Finally, it reports on the presence of

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economies of scale discernable from descriptive analysis of the date.

Chapter 9 describes data related to the Children circle in Figure 2.1 collected in the first year of the Developmental Outcomes portion of the study. It gives mean scores of children in a center related to their cognitive pre-academic skills: receptive language ability, pre-reading skills, and pre-math skills. It also summarizes teacher ratings of children's behavioral skills and the teacher-child relationship, and family characteristics of the children's families.

Chapter 10 summarizes results related to the Family circle in Figure 2.1 from the Parent Questionnaires distributed in sampled classrooms. In addition to demographic data on the families, it gives parent evaluations of aspects of the ECE services provided in their child's room at the center, compares those evaluations with those of the trained observers, and gives parent assessment of the importance of each quality characteristic they assessed in their child's room.

Chapter 11 compares center characteristics within the nonprofit and for-profit sectors to identify differences by auspices (the subsectors). Nonprofit centers are categorized as independent, church-affiliated and publicly operated; for-profit centers as independent, centers in local chains, and centers in national systems. The chapter also compares characteristics of centers (1) based on whether or not they received substantial government funding and on the type of government support received; (2) categorized by whether or not they have public funding tied to special standards; and (3) categorized by whether or not they were subsidized worksite centers.

ANALYTIC PROCEDURES

All measures were studied descriptively to determine whether there were reliable differences related to region, sector, or program scope. These results, summarized in each chapter, are based on the same analytic procedure. For each measure, the major tables in Part 2 give the number of observations, the overall mean and standard deviation, and means and standard deviations by for-profit and nonprofit sectors in each state.

To test for statistically significant differences, a set of hierarchical regression analyses was performed on each class of measures (e.g., the ethnicity of children and staff). These analyses asked whether there were differences in the class of measures related to the study sampling design or to three program scope measures: the proportion of center FTE children who were subsidized, the proportion who were infants/toddlers, and whether the center offered a before- or after-school program. The sampling design involved random selection of 50 for-profit and 50 nonprofit centers in each state. Accordingly, the first stage of analysis determined whether there were significant state or sector differences in the measures. The second stage of analysis tested whether or not there were differences in means based on the three program scope variables. These scope variables were selected because they represent important dimensions of the center programs. The number of children enrolled in a center was represented by the tally of the full-time equivalent (FTE) children. The proportion of children receiving subsidies was computed as the FTE of subsidized children divided by the total center FTE of enrolled children. Similarly, the proportion of children who were infants/toddlers was computed as the FTE infants/toddlers divided by the total FTE of enrolled children.

The general analysis strategy involved performing multivariate analyses where appropriate within each class of variables. In the first stage of analysis, a multivariate analysis of variance (MANOVA) was performed, where appropriate, for each class of variables to test for state, sector, and state x sector differences. In the second stage, where appropriate, a multivariate analysis of covariance (MANCOVA) was conducted to test whether the center scope variables related to the set of related variables after adjusting for state and sector differences. The predictors in the MANCOVAs included state, sector, state x sector, proportion of children receiving subsidies, proportion of children who were infants/toddlers, and whether the center offered before- and after-school care. A priori planned step-down analyses were conducted when significant multivariate effects were obtained. The univariate analyses (ANOVA and ANCOVA) were examined when the corresponding multivariate test was significant.

Pairwise comparisons of the state mean or State x Sector means were conducted when univariate tests were significant. In the tables reporting results, the univariate analysis (ANOVA and ANCOVA) is reported. MANOVA and MANCOVA results are given in the text.

Chi Square and logistic regressions were conducted to analyze categorical measures, such as the presence or absence of volunteers, types of programs, whether a given nonwage benefit was provided, etc. The same two-stage analyses were performed when significant effects were obtained.

MAJOR FINDINGS

CHAPTER 4, CENTER STRUCTURE

► Child care centers tended not to be well integrated by ethnicity. Most centers predominantly served children from a single ethnic group and were staffed by teachers and assistant teachers of the same ethnic group.

► Many centers seem to have been operating at close to their preferred enrollment and 68% of directors reported that they maintained a waiting list, with a larger number of infants and toddlers per center than older children on the waiting list. They reported high rates of capacity utilization (averaging 82% of legal maximum enrollment and 92% of preferred enrollment).

► Nonprofit centers were more likely than for-profit centers to have center structure characteristics that are valued by experts in early care and education such as larger facilities, smaller enrollments, proportionately more subsidized children, provision of more special services to the children, and more parent involvement.

► Only 38% of the centers used volunteers. Nonprofit centers made more use of volunteers, and these volunteers contributed an average of $800 per month of services per center for the 158 centers using volunteers.

► For-profit centers tended to be growing more in terms of total FTE and new staff positions and to offer a much wider range of programs such as infant or toddler care, programs for school-aged children, part-time care, and summer camp.

► When teachers rated directors, the directors received their highest administrative scores on communication for problem solving, and modeling ECE practice. Their lowest scores were on exchanging roles with their staff, and working in the community.

CHAPTER 5, CENTER STRUCTURE: STAFF POLICIES AND CHARACTERISTICS

► Mean wages for teaching staff were $6.89 per hour. State-level differences almost disappeared after adjusting for regional differences in cost-of-living. Wages in for-profit centers averaged almost one dollar per hour lower than in nonprofit centers. When discounted for inflation, wages were roughly comparable to those reported in the National Staffing Study, suggesting that real wages at ECE centers did not increase between 1988 and 1993.

► Nonwage benefits in ECE centers seemed to be comparable to the national average. However, the ratio of the cost of benefits to wages was low, 18% compared to the national average of 23%.

► Center staff (97% women) tended to earn less than women in the society as a whole with the same education and experience. These foregone earnings amounted to an average of $5,238 per year for teachers, $3,582 per year for assistant teachers, and $3,198 per year for directors and specialists. High standard deviations within each job title indicate considerable difference in foregone earnings within ECE occupations. Foregone earnings were significantly higher in for-profit centers than in nonprofit centers for teachers and assistants. In Colorado for all job titles foregone earnings were significantly higher than in the other states.

► The mean annual turnover rate for all center staff was 36%: 39% for teachers, 52% for assistant teachers and aides, and 16% for teacher-directors and directors. Rates were higher in North Carolina and Colorado, and higher in for-profit centers than in nonprofits.

- A sizeable percent of staff members were part of low-income households, young, inexperienced, low paid, and reporting little commitment to their jobs in ECE. Both nonprofit and for-profit centers seem to depend on this labor pool.

CHAPTER 6, CLASSROOM PROCESS AND CLASSROOM STRUCTURE

- On average, measures of classroom structural quality were higher in states with more stringent child care regulation. This held true for most classroom structure variables, including staff-to-child ratios, groups size, level of teacher early childhood training and formal education, and teacher tenure at the center.

- In general, measures of classroom structural quality, which are generally associated with classroom process quality, were higher in non-profit centers than in for-profit centers, including staff-to-child ratios, group size, levels of teacher and teacher-director early childhood training and formal education, and teacher tenure at a center.

- Child care at most centers in the sample did not meet the "good quality" standard considered necessary for children's positive development. The mean value of the process quality index - which is based on the ECERS, ITERS, Arnett, and Howes teacher-child interaction scores - was 4.0 for the whole sample, half-way between minimally adequate- and good-quality.

- Infant/toddler groups of children received lower quality care than older children in centers, especially in the areas that affect the health and safety of these children.

- There were significant state differences in process quality scores, with quality significantly higher in California and Connecticut than in Colorado and North Carolina.

- Quality scores for North Carolina were significantly lower than in the other states, because of lower scores for North Carolina for-profit centers. There were no significant differences in process quality by sector for the other three states.

- A comparison of process quality data from this study and the 1988 National Child Care Staffing Study (NCCSS) indicates no progress toward higher quality in the five intervening years. There may have been a decline in the quality of care and education for infants/toddlers since the NCCSS study.

- Programs in rooms in nonprofit centers were observed to have more academic emphasis than in rooms in for-profit centers in California and North Carolina, while in Connecticut the reverse was true, and in Colorado there were no sector differences.

CHAPTER 7, RECONCEPTUALIZING THE EARLY CHILDHOOD WORK FORCE

- The large variation in foregone earnings within ECE job titles indicates wide variation in education/training within these occupations and brings into question the actual usefulness of the job titles in describing the quality of ECE staff. Staff were reclassified into three categories of educational background: background 1 consisted of staff with a high school education or less and minimum or no ECE training; background 2 consisted of staff with some college education; background 3 consisted of staff with a college degree or advanced ECE training. Teachers and assistant teachers were equally likely to be classified in background category 2; twice as many assistants as teachers were classified in background 1 and one-third as many were classified in background category 3.

- In California, teaching staff were disproportionately drawn from background 2 rather than 1 or 3. Staff in Colorado and Connecticut were approximately equally distributed across the three background categories. North Carolina had proportionately fewer teaching staff with background 3.

- For-profit and nonprofit centers tended to use about equal proportions of staff in background category 2, but for-profit centers used more teaching staff from background 1 and less from background category 3.

- Centers paid staff with more education and training significantly higher wages. However, nonprofit centers paid much more than for-profit centers for teaching staff with college degrees and advanced ECE training.

- Teaching staff in background category 3 gave up more foregone annual wages than staff in the other categories, with staff in for-profit centers providing a mean wage subsidy of $10,000 per year.

- Classrooms with background 3 teachers provided higher quality than classrooms with background 2 teachers, which provided higher quality than classrooms with background 1 teachers.

CHAPTER 8, COSTS, REVENUES, AND SUBSIDIES

- Nonprofit centers were somewhat more expensive to run than for-profit centers: mean total expended costs for nonprofit centers was $2.23 per child hour compared to $2.00 per child hour in for-profit centers. Most of the higher cost in nonprofits stemmed from paying closer to market wages for staff. Connecticut centers were substantially more expensive, and North Carolina centers less expensive, than centers in California and Colorado.

- Nonprofit centers had higher full cost of care than for-profit centers.

- The composition of costs differed by sector with nonprofits spending more per child per hour on labor and for-profits spending more on facilities.

- For-profit centers were far more dependent on parent fees than nonprofit centers, although even in for-profit centers, parents' net cost after taxes was less than two-thirds of the total production cost (including all subsidies). For nonprofit centers, but not so much for for-profit centers, cash donations were significant sources of revenue and inkind donations significantly reduced costs. The nonprofit centers served substantially more subsidized children and centers with a higher percentage of their FTE composed of subsidized children had higher costs per child.

- Economies of scale appeared to be significant. The largest centers had the lowest costs per child hour.

- Profits or surpluses amounted to about 4% of total cash costs with no significant differences between for-profit and nonprofit centers.

- Mean fees per month were $451 for infants, $430 for toddlers, $397 for older toddlers, $372 for preschoolers, and $234 for school-aged children. There were significant differences across states for all age-groups except for school-age fees. For-profit centers charged $19 to $39 per month more for all age-groups except school-aged children.

- Maximum reimbursement paid by the state for subsidized children averaged just over 90% of parent fees. The ratio of reimbursement fees to parents fees differed significantly across states. For most age-groups, North Carolina reimbursements averaged 1% higher than parent rates in the same centers; California reimbursements averaged about 95%, Connecticut 87%, and Colorado 81%.

CHAPTER 9, DESCRIPTIVE ANALYSIS OF PRESCHOOL CHILDREN'S DEVELOPMENTAL OUTCOMES

- After controlling for the effects of maternal education, children in North Carolina tended to score lower on measures of cognitive skills than children in the other three states, while children in Connecticut tended to score higher than the other states sampled. .

- These differences in children's outcomes are consistent with differences in child care quality in this sample, with centers in North Carolina and Colorado measuring lower in process quality than centers in California and Connecticut.

- There was some evidence for higher scores on two measures of cognitive skills for children attending for-profit than nonprofit centers, after accounting for maternal education, although this pattern was not found in all states.

- Mothers using for-profit child care tended to be more highly educated than those using nonprofit care, except in North Carolina where the differences were in the opposite direction.

- No differences were found by state, sector, or program scope in teacher ratings of children's social skills or the teacher-child relationship for both positive and negative aspects of each.

- North Carolina looks somewhat different from the other states in terms of child care quality as well as children's outcomes. The overall quality was lower, although there were greater sector differences in quality than in the other states. In North Carolina, quality was higher in nonprofit than for-profit centers; similarly, maternal education levels were higher in nonprofit than for-profit centers in this state.

- The most consistent finding related to program scope was that children who attended centers with higher proportions of subsidized children scored lower in cognitive skills, had less positive attitudes, and had mothers with less education. This finding may relate to the already known relationship between family income and children's development.

- A similar pattern of results was found for the quality index from both the subsample of centers included in the outcomes phase of the study and the overall sample for which cost and quality data were obtained.

CHAPTER 10, PARENTS AS CHILD CARE CONSUMERS

- Parents highly valued aspects of child care which early childhood professionals believe to be necessary components of good-quality care.

- For the infants/toddler group, Parents' values related to ECE services appear to be relatively consistent across state and sector. The only difference found was that parents in Connecticut reported valuing more highly child and adult interaction items than did parents in Colorado, and parents using centers enrolling fewer infants/toddlers valued interaction, "other," and "all" items more highly than parents with children in centers enrolling a higher percentage of this age-group.

- For the preschool group, parents in North Carolina gave more importance to health items. Parents of preschoolers in nonprofit centers gave higher scores for the "other" items and also for "all" the items.

- When actual performance of centers was compared with parents values, there appeared to be a serious mismatch. For instance, although parents valued health aspects of ECE very highly, the average center scores were just at a minimum level when assessed by trained observers. The match between values and program performance for preschool classes was somewhat better.

- Parents significantly overestimated the quality of care their children received. There was, however, more similarity between parent ratings and trained observer ratings for centers with higher quality. Also, parents were less discriminating in judging the quality of care in infant/toddler rooms than in preschool rooms.

- Parents seemed to have been hindered in acting as well-informed consumers of child care. First, the more importance parents' attached to an aspect of care, the greater were the discrepancies between parent and observer quality scores. Second, the more difficult it was for parents to monitor an aspect of care, the greater the discrepancies between parent and observer quality scores.

CHAPTER 11, WITHIN SECTOR COMPARISONS, AND THE EFFECT OF PUBLIC SPENDING

- For-profit auspices did not differ significantly on total costs, total revenue, or total subsidies per child hour. On average all for-profit auspices had lower quality, costs, subsidies, revenue, and full cost per child hour than independent nonprofit and publicly operated centers.

- Church-affiliated centers looked more like for-profit centers than they looked like the other nonprofit centers. They had lower structural quality and process quality than other nonprofits; they served smaller percentages of subsidized children and minorities; wages and labor costs were lower than other nonprofits and similar to those for for-profits. Like for-profit centers a larger percent of their revenue came from parent fees.

- Compared to other centers, centers with public funding tied to higher standards provided higher quality, paid higher wages, provided more benefits and working conditions, and their staff had lower foregone wages.

- Quality of services for centers dependent on fee reimbursement was not significantly different from average quality of services in the sample as a whole. There is some evidence of budgetary impact from low reimbursement rates in Colorado and North Carolina, states with lower average quality and lower public funding of subsidized children.

- Compared to other centers, worksite centers had higher quality, administrators had more education and training, wages and benefits were higher, and foregone earnings were lower.

Chapter 4

Center Structure

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Various measures of center structure were analyzed to describe the centers that participated in this study and to determine whether there were statistically reliable differences related to state, sector, or program scope (percent of FTE children subsidized, percent infants/toddlers, and presence of a school-aged program). Information about center structure was collected in the director's interview, evaluation of the physical space by the observer, and the administrative questionnaire completed by the teachers. Included in these questionnaires were items that were classified into seven general categories of structural measures: (1) general descriptors (age of the center, hours of operation, center curricula, and center enrollment), (2) ethnicity of the children and the staff, (3) the administrator's background and administration style, (4) types and numbers of services and programs offered at each center, (5) whether the center has volunteers and a description of those volunteers, (6) extent to which centers encourage parental involvement and degree to which parents are involved, and (7) measures of center growth, increases in enrollment and new staffing positions added during the past year. In addition, the interviewer measured square footage and evaluated aspects of the physical space, safety, and attractiveness of the center.

RESULTS

GENERAL CENTER CHARACTERISTICS

The general center characteristics measured in the director's interview included the number of children enrolled in the center, information about enrollment, the age of the center, and hours of operation. Due to the variety of characteristics in this general category, separate sets of analysis were performed for relatively homogeneous sets of center characteristics.

Enrollment

Number and Age Composition of Children. The centers varied widely in terms of the number and the ages of the children served. The 401 centers enrolled between 8 to 307 children as total FTE enrollment, with a mean enrollment of 68 FTE children. Almost half (48%) of the centers exceeded the recommended maximum size of 60 FTE children based on several research studies that related center size to quality of child care (Doherty, 1991). Almost all child care centers served preschoolers, whereas slightly more than half (61%) served infants or toddlers also. The percentage of the total FTE children enrolled in the center that were infants or toddlers ranged from none to all, with a mean percentage of 22%. In addition 57% of the centers also served school-age children by providing kindergarten or before- or after-school care. The percentage of the total FTE children enrolled who were school-age children ranged from 0 to 78%, with a mean percentage of 18%.

The first set of analyses tested for state and sector differences. The centers were significantly different in terms of size and ages of children served across the four states ($F_{(9,952)}=11.3$, $p<.0001$) and two sectors ($F_{(3,391)}=13.9$, $p<.0001$), but the sector differences were similar across states (i.e., the state x sector interaction was nonsignificant). Univariate test results and state x sector means can be found in Table 4.1. As can be seen in Table 4.1, for-profit centers tended to be larger, have proportionately more infants or toddlers, and proportionately more school-age children. Connecticut had significantly smaller total enrollments than did the other states. The proportion of infants or toddlers in the centers was highest in North Carolina, next highest in Colorado and Connecticut, and lowest in California. In addition, the centers in Colorado tended to have proportionately fewer infants than did the centers in North Carolina. Centers in Colorado had proportionately more school-age children and fewer preschool-age children than did the centers in the other states.

The second set of analyses tested whether the three program scope variables were related to center size composition after adjusting for state and auspice differences. MANCOVAs were not performed because two of the predictors were also outcome measures in this set of analyses (proportion of total enrollment that were infants or toddlers and presence of a before- or after-school care program). Univariate analyses indicated that the proportion of children receiving subsidies was not related to the number or age composition of the children enrolled in the centers. The proportion of children who were infant or toddlers was negatively related to the proportion of children who were preschoolers or school age. The centers that offered before or after-school care tended to have more children enrolled, fewer infants and toddlers, fewer preschoolers, and more school-aged children.

Other Enrollment Issues. The administrators were also asked several other questions about their current enrollment. Two ratios were formed that reflected the extent to which current enrollment reflected preferred enrollment and the extent to which their current enrollment reflected maximum enrollment allowed for that center. In addition, the administrators were asked if they had a waiting list, and if so, how many children were on that waiting list.

The ratios describing current enrollment relative to preferred enrollment and maximum mandated enrollment were analyzed together. Administrators tended to report that their current enrollment was close to preferred enrollment (M=91%) and to their maximum mandated enrollment (M=82%), but there was considerable variability. Center enrollment ranged from 15% to 265% of preferred enrollment, with half of the centers ranging from 81% to 100%. Similarly, center enrollment ranged from 15% to 165% of maximum enrollment, with half of the centers ranging from 80% to 100%. Analyses indicated that the proportion of total enrollment composed of infants or toddlers was related to these enrollment ratios, but that proportion of children enrolled in the center who received subsidies and the presence of a before- or after-school care were not related. Centers with proportionately more infants were less likely to have enrollments that approached either their preferred enrollment levels or their maximum mandated enrollment levels.

Most centers (68%) reported having a waiting list as can be seen in Table 4.1. Nonprofit centers were slightly more likely to report waiting lists than for-profit centers in California, Connecticut, and North Carolina, but not in Colorado. Centers serving proportionately more infants or toddlers were less likely to have waiting lists than other centers. Table 4.1 also lists the number of children that the administrators reported to be on the waiting lists, but these data were not analyzed because the centers varied in how often the waiting lists were updated.

Center Age and Hours

The age of the center varied from 1 to 98 years, but half of the centers were established during the past 10 years. An ANOVA that tested whether the center age varied as a function of state or profit status indicated that the nonprofit centers tended to be older than the for-profit centers and that this trend was stronger in Connecticut than in California. The ANCOVA indicated that centers serving proportionately more subsidized children tended to be older centers and that centers serving proportionately more infants tended to be younger centers.

The hours of operations varied from 7.5 to 18 hours per day, with a mean of 11.1 hours (note: a selection criterion was full-time care was offered at the center). Only 10% of the centers were open 12 or more hours per day. Analyses indicated that hours of operation were related to state, sector, and scope of the program (see Table 4.1). Centers in Colorado and North Carolina tended to be open longer than centers in the other states, whereas centers in Connecticut tended to be open the fewest hours. The hours of operation were longer in for-profit than nonprofit centers. Hours of operations tended to be shorter in centers with proportionately more subsidized children, whereas hours tended to longer in centers with proportionately more infants or in centers offering before- or after-school care for school-aged children.

Curriculum

Administrators were asked whether they used a formal learning curriculum (e.g., Montessori or High-Scope) or a religious curriculum. Relatively few centers reported having either type of curriculum (see Table 4.1). Only 17% of the centers reported using a formal learning curriculum. Even fewer centers (8%) reported using a religious curriculum. Use of an enrichment curriculum was analyzed for state, sector, or program scope differences, but use of a religious curriculum was not because of its low frequency. Only one factor, state, was related to use of a learning curriculum, with centers in California reporting more frequent use of curriculum than centers in North Carolina.

Proportion of Subsidized Children

The proportion of children who received subsidies varied widely, with from 0 to 100% of enrollment consisting of subsidized children (M=23%). Analysis of the proportion of children receiving subsidies indicated that only sector was related, with the proportion of children receiving subsidies higher in nonprofit centers than in for-profit centers. Neither state nor program scope was related to this variable.

Accreditation

Very few centers (31 of 401) had obtained NAEYC accreditation. Table 4.1 lists the proportion of centers with accreditation by state and sector.

CHILD AND STAFF ETHNICITY

Ethnic Composition of the Children

The ethnic composition of the children enrolled in the centers varied widely. The percentage of the children enrolled at a center from each ethnic group ranged from 0% to about 100%: European-American children accounted for 0 to 100% of the children enrolled in the center ($\underline{M}$=66%), African-American for 0 to 100% ($\underline{M}$=18%), Asian-Americans for 0 to 98% ($\underline{M}$=4%), and Latinos for 0 to 100% ($\underline{M}$=10%). However, most centers tended to include few minority children. Almost all centers enrolled at least one European-American child (93%) and most enrolled at least one African-American child (82%), but only 50% had at least one Asian-American child and only 62% had at least one Latino child. African-American and Latino children were especially underrepresented in most centers given their overall representation in this sample. Of the 401 centers, 68% of the centers had fewer than 10% African-American children in their total enrollment and 77% had fewer than 10% Latino children in their total enrollment.

MANOVAs compared the proportion children of various ethnic groups in the total enrollment of a center to determine whether ethnic composition varied as a function of state and sector. Significant overall differences related to state ($F_{(15,602)}=10.3$, $p<.0001$) and sector ($F_{(5,218)}=9.4$, $p<.0001$) were detected (See Table 4.2 for state x sector means and univariate test results). As shown in Table 4.2, compared with children in nonprofit centers, children in for-profit centers were more likely to be European-American and less likely to be African-American or Latino. The state differences reflected regional variation in ethnicity. Children in California centers were significantly less likely to be European-Americans and more likely to be Latinos or Asian-Americans than were children in centers in other states. Children in North Carolina centers were significantly more likely to be African-Americans than were children in centers in other states. The proportion of the center children who were Latinos was much higher in centers in California and Colorado than in centers in Connecticut and North Carolina.

Next, the ethnic composition of the children was related to the program scope variables (see Table 4.2 for the standardized regression coefficients from these analyses). These analyses indicated that centers with proportionately more subsidized children tended to have proportionately fewer European-American or Asian-American children and more African-American or Latino children. Whether the center offered infant/toddler care or before- or after-school care was not related to ethnic composition.

Ethnic Composition of Center Staff

The ethnic composition of the staff tended to mirror the ethnic composition of the children. The proportion of the staff of each of the major ethnic groups ranged from 0 to 100% across centers. On average, 70% of the staff members were European-Americans, 2% were Asian-Americans, 16% were African-Americans, and 10% were Latino. The correlations between the proportion of children and of staff for an ethnic group tended to be high: $r=.80$ for the correlation between the proportion of children and the proportion of staff who were European-American; $r=.82$ for the proportion of children and staff who were African-American; $r=.71$ for the proportion of children and staff who were Latino; and $r=.56$ for the proportion of children and staff who were Asian-Americans. European-American staff were much less likely to be at centers with higher proportions of African-American children ($r=-.63$). Similarly, African-American staff ($r=-.61$) and Latino staff ($r=-.41$) were much less likely to be at centers with higher proportions of European-American children.

Whether the ethnic composition of the staff varied across the four states and sector was examined next. Significant state ($F_{(12,1032)}=26.9$, $p<.0001$), sector ($F_{(4,390)}=7.4$, $p<.0001$), and state x sector ($F_{(12,1032)}=2.33$, $p=.006$) differences emerged in the MANOVA. The univariate test results and state x sector means are listed in Table 4.2. The state x sector interaction reflected the finding that sector differences were different in California. The proportion of Asian-American staff members was higher in for-profit centers than in nonprofit centers in California, whereas there were no sector differences in the other states (i.e., the incidence of Asian-American staff was uniformly low in for-profit and nonprofit centers in other states). The sector difference emerged because the for-profit centers were more likely than nonprofit centers to have European-American staff, and less likely to have African-American and Latino staff. The state differences reflected the ethnic differences in the regions of the country included in this study. The proportion of staff members who were European-American was highest in Connecticut, next highest in Colorado, lower in North Carolina, and lowest in California. More staff members were Asian-Americans in California than in other states. The proportion of staff members who were African-American was highest in North Carolina, lower in California, and lowest in Colorado and Connecticut. Proportionately more staff members were Latino in California and fewer in Connecticut and North Carolina.

Next examined was whether the ethnic composition of the staff was related to program scope variables after adjusting for state and sector differences. Staff ethnic composition was related to the proportion of children receiving subsidies ($F_{(4,386)}=33.6$, $p<.0001$) and the proportion of children who were infants or toddlers ($F_{(4,486)}=3.4$, $p=.009$) when MANCOVAs were performed. Table 4.2 lists the standardized regression coefficients for the corresponding univariate analyses. These analyses indicated that the centers with proportionately more children receiving subsidies tended to have proportionately fewer European-American staff members and more African-American and Latino staff members. Similarly centers with proportionately more infants or toddlers tended to have proportionately more Latino staff members.

ADMINISTRATOR'S EDUCATION, EXPERIENCE, AND ADMINISTRATIVE EFFECTIVENESS

Administrator's Background

Information about the center administrators was collected during the director interview and through a questionnaire about the administrator's effectiveness completed by the teaching staff. A few centers seemed to have more than one staff member performing administrative functions. Background characteristics for those centers were represented as the mean of the individuals acting as administrator, weighted by the number of hours each of them worked at the center.

The center administrators tended to be moderately well educated and had considerable child care experience. On average, the administrators had about a baccalaureate level of education (M=15.7 years, ranging from 11 to 20 years of formal education). The early childhood (ECE) training tended to involve at least some college classes in ECE, and for over half the administrators at least an AA, BA, RN, or post-baccalaureate degree in a developmental field. The number of years of prior child care experience ranged from 0 to 40 at the time of the interview, with a mean of 7.7 years. Many of the administrators had been with their center for a number of years, with a mean of 7.1 years. Not surprisingly, the administrators' early childhood education and formal education were highly correlated ($r=.75$), but neither education ($r=.23$) nor early childhood education ($r=.25$) were highly related to experience.

Whether the administrator's education or experience varied across the four states or by for-profit status of the center was investigated with MANOVAs. These analyses revealed that there were significant state ($F_{(12,1006)}=3.2$, $p<.0002$) and sector ($F_{(4,380)}=5.1$, $p=.0005$) differences, and that the sector differences were consistent across the four states (i.e., the state x sector interaction was nonsignificant). Table 4.3 shows the results of the univariate tests and the state x sector means. As can be seen in this table, administrators of nonprofit centers tended to be better educated, have more EC training, be slightly older, have been with their center longer, and have more child care experience in general. Administrators in North Carolina had lower levels of formal education than those in Colorado or Connecticut. The number of years that the administrators had been involved in child care at other centers was higher in Colorado than in Connecticut or North Carolina, but the number of years that that administrator had been at that center was lower in Colorado than in other states. None of the three program scope variables were significantly related to the administrator's education and experience in the ANCOVA analysis.

Administrators' Effectiveness

The administrator's effectiveness as viewed by teaching staff was measured with a questionnaire administered to the teachers. Four analysis variables resulted from this questionnaire: the extent to which the staff perceives the center as well organized, represents the center in the community, works with teachers and other members of the center in facilitating curriculum development, and is involved in the community as an early child care professional. On a scale ranging from 0 to 15, administrators were rated at about the middle of the scale on all but the fourth dimension - their community involvement as an ECE professional, on which they were rated lower by their teaching staff. These dimensions of administrative effectiveness tended to be modestly correlated, with the correlation between representing center in the community and community professional involvement being more highly correlated ($r=.59$).

Analyses of the administrative effectiveness variables indicated that there were marked differences related to state ($F_{(12,961)}=2.0$, $p=.02$) and sector ($F_{(4,363)}=7.0$, $p<.0001$), but that the sector differences were similar across the four states. Table 4.3 lists the univariate test results and the state by sector means. As can be seen in this table, compared with administrators of for-profit centers, administrators of nonprofit centers were more involved with teaching staff in the center organization, represented the center more extensively in the community, and were more involved as a child care professional in the community. Center administrators in Connecticut were more likely to involve staff members in center organization than were center administrators in the other states.

Whether the three program scope variables related to the administrator effectiveness was examined with MANCOVAs. The proportion of children receiving subsidies ($F_{(4,359)}=3.3$, $p=.011$) was the only program scope variable to be significantly related when state and sector differences were also considered in the analysis model. The univariate analysis shown in Table 4.3 shows that centers with proportionately more subsidized children and centers with a school-aged program tended to have administrators who were rated lower on their organizational ability.

TYPES AND NUMBER OF SERVICES OR PROGRAMS

Administrators were asked whether they offered special services such as transportation, meals, or dental, medical, and developmental screening and about eleven different types of programs. The number of special services provided through the center were tallied. In addition, whether the center offered programs that ranged from summer camp and after-school care, to Head Start, to part-time care was recorded.

Special Services

The number of special services offered by each center varied from 0 to 12 special services, with a median of 4 services. These services included: provision of meals at the center; screening for vision, hearing, speech, developmental, and dental problems; providing or arranging for counseling, speech services, and social services for the family; and transportation services for the child. As can be seen in Table 4.4, the number of special services available at a center varied as function of state and sector. Centers in North Carolina offered more services than centers in other states, centers in Colorado offered more than centers in California and Connecticut, and centers in California offered more services than centers in Connecticut. Nonprofit centers reported more special services than for-profit centers. The ANCOVA indicated that centers with proportionately more subsidized children offered more services, whereas centers with proportionately more infants offered fewer services.

Programs

Administrators were asked whether they provided each of twelve types of programs at their centers. These program questions asked whether the center provided services that ranged from part-time care, to programs for school-age children, to extended hour care such as evening or sick care, to specialized programs such as Head Start and bilingual programs. Too few centers offered programs such as Head Start (2%), public school-sponsored programs (6%), evening care (4%), week-end care (3%), 24-hour care (1%), sick care (2%), or bilingual programs (12%) to permit analysis of these types of programs. Analyzed were questions about whether the center offered part-time care, extended part-time care, after-school care, and summer camp. In addition, the number of these programs that each center offered were tallied and analyzed.

The number of these twelve types of programs offered by a center significantly differed across state and between for-profit and nonprofit centers, as can be seen in Table 4.4. Centers in Colorado offered a wider variety of programs than did the centers in other states. For-profit centers offered more different types of programs than did nonprofit centers. In addition, centers that offered before- or after-school care tended to offer more other types of programs. Neither the proportion of infants or of subsidized children was significantly related to number of programs offered.

Logistic regressions examined the proportion of centers that offered specific types of programs. State differences emerged in analyses of whether centers offered part-time care, part-time extended care, before- and after-school care, or summer camp. Fewer centers in North Carolina offered part-time care or extended part-time care than did centers in the other three states. Fewer centers in California offered before- or after-school care than did centers in other states. Centers in Colorado or North Carolina were more likely to offer summer camps than were centers in California or Connecticut. For-profit centers were more likely to offer each of these types of programs: part-time care, part-time extended care, before- and after-school care, and summer camp. These sector differences were observed across all states; no reliable state x sector interaction emerged in analyses.

The extent to which the program scope variables related to the types of programs offered by the centers was examined next. Centers offering before- and after-school care tended to have a large number of different types of programs and were more likely to offer part-time care, extended part-time care, or summer camps. The proportion of infants or toddlers was higher in centers that offered before- or after-school care and summer camps. The proportion of children who were receiving subsidies was higher in centers that offered part-time care, extended part-time care, or summer camps.

PHYSICAL SPACE

The staff person who interviewed the center administrator observed several characteristics related to safety, and sanitation of their facilities. In addition, observers were instructed to measure the indoor and outdoor spaces, the indoor space used by children, and the outdoor space that was shaded and waterproof. The centers ranged from reporting 558 to 35,000 square feet of inside space (M=4950 square feet), with most of that inside space used by the children (M=3617 square feet, range of 234 to 26,715 square feet). Half of the centers had between 2240 and 6400 square feet in their inside space. All but one center reported that they provided outside space, but the amount of outside space varied widely (from 0 to 99,000 square feet, M=9,439 square feet). Only about one-third of the centers (36%) reported that at least some of their outside space was shaded and waterproof.

This physical space was also examined in terms of the total enrollment of the center. The centers provided an average of 82 square feet of inside space per FTE child (ranging from 16 to more than 300 square feet per child) and an average of 160 square feet of outside space per FTE child. Most of this inside space was used by the children (Mean=60 square feet, sd=56). Most centers in this study (92%) met the NAEYC recommendation and Federal Interagency Day Care Requirement of at least 35 square feet of inside space per child and of at least 75 square feet of outdoor space per child (72%), with 68% of the centers meeting both space recommendations (cf. Doherty, 1991).

In addition, the observers answered questions about the general sanitation (such as whether you could smell the diapers in the infant room) and attractiveness of the centers (especially the parts observed by parents such as the entrance). Most centers were described as having wall treatments that are soil resistant and easily cleaned (75%), classrooms with windows or doors that opened to outside that could be used in emergencies (94%), appropriate lighting (95%), safety covers for electrical sockets (82%), classrooms with smoke alarms (80%), appropriate ventilation (88%), good temperature control (97%), and no problem with odor next to the changing tables(87%). In contrast, less than half of the centers (48%) had mechanical rooms that could be accessed only from areas other than those used by the children.

Preliminary analyses were conducted to determine which of these questions could be combined to form consistent summary scores. Those analyses indicated that two summary scores describe these data about physical space. The first summary score included the size of the indoor and outdoor space (square footage). The natural logarithm of the total square footage was used in analysis due to its skewed distribution. The second summary score included questions about whether the children's rooms had windows or doors, used an appropriate combination of natural and artificial lighting, had a mechanical room childproof access, was well ventilated, was odor free, and had an attractive entrance.

Table 4.5. summarizes state and sector means and test statistics for these physical space variables. Analyses indicated that the total indoor and outdoor square footage of the centers in Connecticut was smaller than in the centers in the other states. A state by sector interaction occurred because for-profit centers were larger in terms of physical space on average than nonprofit centers in California, while nonprofit centers were larger in terms of physical space than for-profit centers in the other states. In contrast, analysis of the average square footage per child indicated that centers in Connecticut and Colorado provided more indoor space per child than did centers in California, and that nonprofit centers provided more space per child than did for-profit centers. Analysis of the summary score reflecting attractiveness and safety indicated that centers in North Carolina scored lower than centers in the other states. Sector interacted with state because nonprofit centers scored higher than for-profit centers in North Carolina and Colorado, but for-profit centers scored higher than nonprofit centers in California.

The physical space of the centers was found to be modestly related to the program scope variables. Centers with proportionately more subsidized children tended to provide more indoor space per child, as did centers with proportionately more infants or toddlers. In contrast, outdoor space per chld was lower in centers with proportionately more infants and toddlers. Centers offering before or after school programs tended to have more total space than did other centers.

VOLUNTEERS

The administrator was asked during the interview whether the center had volunteers. If the center had volunteers, the administrator was asked to list the volunteers and to indicate for each whether the volunteer was the parent of a child enrolled in the center, how many hours per month and the type of service provided by that volunteer, and the occupation of the volunteer. Descriptive analyses of the data indicated that less than half of the centers used volunteers (39%). The number of volunteers for centers with volunteers ranged from 1 to 18, with an average of 3 volunteers per center. Most volunteers were not parents of children at the center (29% parents), but this ranged from 0% to 100% across the 158 centers reporting volunteers. Volunteers worked between one hour and more than 100 hours per month, with a mean of 44.9 hours per month per volunteer. For centers with volunteers, administrators reported they received between 1 and 1,964 hours per month of combined service from their volunteers, with a mean of 124 hours per month. It was estimated that these services were worth an average of $800 per month, based on the administrator's report of wages for those services and the number of hours worked by volunteers. The volunteers provided a variety of services, serving as teacher aides (58%), maintenance workers (11%), chaperons on field trips (10%), fund raisers (7%), leaders of special activities such as music (7%), secretaries (7%), accountants (6%), classroom teachers (6%), members of governing boards (6%), teachers or aides for children with special needs (4%), and special professionals (4%). The reported occupations of the volunteers included student or intern (35%), manager or professional (21%), retired (20%), housewife or househusband (15%), technicians or skilled labor (7%), and unskilled labor (4%).

Comparisons of these volunteer data for state and sector differences were conducted for the variables with sufficient variability (i.e., for variables with mean values of at least 10% for the proportion of volunteers at a center performing a given type of service and having a given occupation). Multivariate analyses were not conducted due to varying sample sizes across variables. Logistic regression analysis tested for state and sector differences in whether the center reported having volunteers. Results displayed in Table 4.6 indicatesthat nonprofit centers were much more likely to have volunteers than were for-profit centers, and that this tendency was more prevalent in California and North Carolina than in Colorado or Connecticut. Whether the volunteer was a parent of a child enrolled in the center differed significantly across the states, with significantly more volunteers being parents in California than in Connecticut or Colorado. In contrast, the number of hours worked, the estimated monetary worth of the volunteered time, the occupations of most of the volunteers, and the services provided by the volunteer were not significantly different across state or sector amoung the centers with volunteers. Modest state and sector differences in some occupations were observed. Volunteers in North Carolina were more likely to be students, whereas volunteers in California at for-profit centers were more likely to be professionals. Retirees were slightly more likely to volunteer at nonprofit centers than at for-profit centers.

Whether the program scope variables related to the use of volunteers was examined next. Analyses indicated that centers with proportionately more infants or toddlers were less likely to have volunteers. In contrast, amoung centers with volunteers, centers with proportionately more subsidized children tended to have more volunteers per center who worked more hours and provided services estimated to be worth more money in total, and these volunteers were slightly more likely to serve as teacher aides and to be retirees. Neither the proportion of children who were infants or toddlers or whether the center offered before or after school care was related to these volunteer variables.

PARENTAL INVOLVEMENT

Administrators were asked about the extent to which the center encouraged parental involvement and the level of parental involvement of the parents. According to the administrator reports, slightly over half of the centers encouraged any level of parental involvement in their children's education (58%). Of those 232 centers, 116 center administrators reported that fewer than one-quarter of the parents were involved in the center activities, 77 administrators reported that about half or more of the parents were involved voluntarily, and 29 administrators reported that parental involvement was mandatory. Similarly, the administrator was asked about the degree to which the program involves parents in the following: spending time at the center in addition to dropping off and picking up the child, assisting in fund raising, maintenance, participation in parent advisory groups, chaperons on field trips, and participation in celebrations. A total score was computed that reflected the extent to which parents were involved in each of these activities. The overall level of parental involvement in the centers ranged from none (no parent was involved) to 16 (most parents were involved in most activities), with a median of 5 (a few parents were involved in few activities).

Analysis of these two measures of parental involvement indicated nonprofit centers encouraged more parental involvement and reported higher levels of parental involvement than for-profit centers (see Table 4.7). Neither state nor program scope variables was related to parental involvement.

CENTER GROWTH

During the director's interview, the administrator was asked about increases in enrollment and staffing positions during the past year. Center administrators indicated that enrollment tended to be increasing, with a mean level of increase of 7% over the previous year and a range from 38% loss to a 186% gain. About three-fourths of the centers reported a gain in enrollment compared to the previous year. As can be seen in Table 7.8, State and Sector differences emerged in analysis. These were due to the finding that centers in Colorado had increased their enrollment proportionately more during that past year than did centers in the other states, and that for-profit centers had increased their enrollment more than had nonprofit centers.

During the director interview, the administrators also were asked about the number of new teacher, teacher aide, and teacher director positions that had been created during the past year. The results of analysis of these data are shown in Table 4.8 along with the means and standard deviation by state and sector. The four states differed in the number of new positions created during the past year. Centers in Colorado added more positions in general than did centers in California or Connecticut, adding more assistant teachers and teacher directors than did centers in the other three states. In addition, centers in Colorado and North Carolina added more lead teacher positions than did centers in California or Connecticut. For-profit centers added more positions in general and teacher positions in specific than did nonprofit centers. The only program scope variable to be related to new positions was the proportion of subsidized children. Centers with proportionately more subsidized children created more new positions in general and more assistants and teacher director positions in specific.

SUMMARY AND DISCUSSION

State, sector, and program scope differences were detected in analyses of selected center structure characteristics. In general, analyses suggested that state and sector differences characterized the results in all examined categories of center structure. In contrast, program scope variables were related to only a few center structure characteristics. Comparisons of the results regarding center structure from this study with those from previous large scale studies of child care centers indicated only minor changes in these measures of center structure had occurred since the last large study, the National Child Care Staffing Study (NCCSS) in 1988.

On average, the centers in this study had opened in the last decade, offered about eleven hours of child care a day, grew by about 7% in the previous year, and enrolled some infants or toddlers, preschoolers, and school-age children.

Almost all centers met recommendations regarding center size, in terms of inside space per child, and about half met Doherty's recommendation regarding total enrollment. The physical size of the centers in this study tended to conform with the recommended minimum of 35 square feet per child of indoor space and 75 square feet per child of outdoor space, based on recommendations by the Federal Interagency Day Care Requirements and recommendations by the National Association for Early Childhood Education (cf. Doherty, 1991).

In this study, the center's age, hours, size, and enrollment patterns varied as a function of state and sector. Centers in Connecticut tended to be older, smaller, and have fewer children enrolled. Centers in Colorado tended to be growing faster in terms of increased enrollment and new staffing positions. Nonprofit centers were more likely than for-profit centers to have smaller enrollments, more physical space per child, for proportionately more of the children enrolled to be preschoolers, and to report having a waiting list. In contrast, for-profit centers were more likely than nonprofit centers to report growth in enrollment and staff during the past year and to have longer hours of operation.

The findings from this study regarding center size and proportion of children who were low income tend to be fairly consistent with findings from previous studies. Whereas the average child care center enrollment rose from 49 to 84 children from 1977 to 1988 (Whitebook et al, 1989), the average enrollment in this study was 68. While it appears that child care centers may not be quite as large on average in 1993 as they were in 1988, almost half of these centers exceeded the maximum size recommended by Doherty (1991) in a review of the research findings related to center quality and child outcomes. The proportion of children attending the centers in this study who received subsidies (30%) was very similar to proportion of low-income children reported in the NCCSS in 1988 (30%) and reported in the National Day Care Study in 1977 (27%).

The age composition of the children in this study was slightly different from previous large scale studies. The average proportion of children in a center who were either infants or toddlers was slightly lower in this study (22%) than was observed by the NCCSS in 1988 (30%), but was higher that was observed in the National Day Care Study in 1977 (14%) (Whitebook et al., 1989). In contrast the average proportion of kindergarten and school-age children in the child care centers in this study (18%) was lower than was observed in 1988 (23%), which was lower than was observed in 1977 (35%). Sector differences in the ages of children served in the centers in this study were stronger, but in the same direction, as those reported by Whitebook and colleagues (1989), with for-profit centers serving proportionately more infants and nonprofit centers serving proportionately more preschoolers.

As reported in previous studies, this study suggested that the ethnicity of children and staff tended to be similar and in general that child care centers tended not to be well integrated (Whitebook et al, 1989). Most centers in this study predominantly served children from a single ethnic group and were staffed by teachers and aides of the same ethnic group. State differences in the ethnicity of the children and staff reflected regional ethnic differences. Nonprofit centers served proportionately more African-American and Latino children and had proportionately more African-American and Latino staff members than did for-profit centers. Asian-American children and staff were not well represented in this study, especially outside of California. In California, Asian-American children and staff were much more likely to be in for-profit than in nonprofit centers. Centers serving proportionately more subsidized children were much more likely to have proportionately more African-American or Latino children and staff. Like previous studies (cf. Whitebook et al., 1989), this study found that about two-thirds of the children in child care centers were European-Americans and that European-American children were more likely to be in for-profit centers than in nonprofit centers. The trend toward decreased proportions of African-American children in child care centers described by Whitebook and colleagues (1989) was maintained in this study. The proportion of African-Americans was 18% in this study, 21% in 1988, and 28% in 1977 (Whitebook et al., 1989). However, this finding may reflect sampling issues such as the inclusion of states with relatively low proportions of African-Americans such as Colorado. Again, similar to trends reported by Whitebook, the proportion of children from other ethnic minority groups was about 13%. Similar to the report by the NCCSS that European-American children were more likely to attend independent for-profit centers (Whitebook et al., 1989), this study found that European-American children were more likely to attend for-profit centers. Unlike the NCCSS, this study found that minority children, especially African-American and Latino, were more likely to attend nonprofit centers than for-profit centers.

In this study, the number and types of special services and programs that the centers offered was also related to state, sector, and program scope. The number of special services was higher in nonprofit centers than in for-profit centers, and higher if the centers served proportionately more subsidized children. For-profit centers, centers serving school-age children, and centers serving subsidized children offered a wider range of programs and were more likely to offer programs such as part-time care, summer camp, and before and after-school care.

The use of volunteers and the encouragement of parent involvement was clearly related to center sector. Nonprofit centers were much more likely to have volunteers and to encourage parent involvement in the center than were for-profit centers. Centers with volunteers received an average of about $800 per month of service from their volunteers, who provided a variety of services.

In general, centers reported little parental involvement in center activities or administration. Slightly over half of the centers encouraged any level of parent involvement; however, in half of these centers administrators reported that few parents are actually involved in these activities. Only 29 administrators reported mandatory parent involvement.

In conclusion:

- These results suggest that differences between the center structure of for-profit and nonprofit centers reflected differences in orientation and that differences among the stat s reflect regional differences.

- For-profit centers tended to enroll more children, to be growing more in terms of total FTE and new staff positions, and to offer a much wider range of programs such infant or toddler care, programs for school-age children, and part-time care.

- Nonprofit centers were more likely than for-profit centers to have center structure characteristics that are related to center quality and child outcomes, such as more space per child in their centers, smaller enrollments, and more parental involvement.

- Nonprofit centers had proportionately fewer school-aged children and fewer programs for school-aged children, proportionately more subsidized children, and more volunteers.

- Regional differences were detected in the center size, age, growth, age composition, and ethnicity.

Chapter 4 Appendix

Tables

Table 4.1	Center Size and Age Composition
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Table 4.1

Center Size, Age Composition

		MEANS BY STATE AND SECTOR									ANOVAS F-tests				ANCOVAS Standardized Regression Coefficients			
		CA		CO		CT		NC		TOTAL								
		NP	P	NP	P	NP	P	NP	P		R^2	State	Profit	State x Profit	R^2	% Subsidized	% Infant	SA Care
N		51	49	50	50	49	52	50	50	401								
Total FTE Children Enrolled	Mean	65.38	84.46	57.94	84.89	42.83	44.16	73.27	91.82	67.99	.14	15.3*** CT<Others	14.2*** P>NP	1.5	.18	-.08	-.08	.15**
	SD	45.98	61.31	34.83	42.90	2.18	24.80	46.21	57.23	46.77								
Infants & Toddlers (Proportion)	Mean	.13	.12	.16	.24	.19	.32	.25	.32	.22	.10	10.1*** CA<CO, CT<NC	9.3*** P>NP	1.7	.20	.05		-.34***
	SD	.21	.21	.26	.20	.23	.25	.22	.21	.23								
Preschoolers (Proportion)	Mean	.74	.71	.63	.48	.66	.51	.65	.45	.60	.16	12.2*** Others>CO	30.2*** NP>P	2.0	.61	.03	-.76***	-.31***
	SD	.26	.26	.27	.18	.26	.24	.23	.17	.25								
School Age (Proportion)	Mean	.13	.17	.21	.28	.16	.17	.10	.22	.18	.08	5.8*** CO>Others	11.0*** P>NP	1.5	.32	-.04	-.22***	.41***
	SD	.18	.21	.22	.17	.23	.16	.16	.15	.19								
Ratio of Actual to Preferred Enrollment	Mean	.90	.86	.92	.91	.91	.88	.97	.90	.91	.02	1.6	3.5	.1	.04	-.04	-.13*	-.08
	SD	.13	.18	.18	.18	.19	.20	.17	.30	.20								
Ratio of Actual to Maximum Enrollment	Mean	.85	.82	.83	.85	.78	.82	.78	.83	.82	.02	1.4	.4	.7	.05	-.01	-.20***	-.12*
	SD	.16	.18	.20	.18	.24	.22	.19	.19	.20								
Whether Center has Waiting List(1)	Prop.	.76	.51	.69	.79	.83	.52	.74	.62	.68		1.9	8.8** NP>P	10.8* CO P>NP NC, CT NP>P		.43	-1.34*	-.12
# Infant/Toddlers on Wait List	Mean	26.26	16.18	16.03	8.45	11.17	7.10	28.95	9.66	15.42								
	SD	42.95	19.57	32.72	8.02	15.57	7.53	67.07	13.26	34.19								
# Preschoolers on Wait List	Mean	65.58	36.86	12.89	7.29	12.37	3.23	28.12	6.52	21.75								
	SD	115.2	66.42	23.11	17.50	20.74	4.23	54.30	9.03	55.89								
# School Agers on Wait List	Mean	48.38	2.15	3.23	1.88	2.06	.29	9.40	4.10	7.48								
	SD	165.8	5.58	14.87	4.45	6.07	1.21	34.72	5.86	49.46								

*** $p<.001$ ** $p<.01$ * $p<.05$

%Subsidized = % of Enrollment that is Subsidized
% Infant = % of Enrollment that are Infant-Toddlers
SA Care = Care of School-Aged Children

1: Logistic regression used - chi-square tests and unstandardized coefficients are reported.

Table 4.1 Continued

Center Characteristics

		MEANS BY STATE AND SECTOR									ANOVAS F-tests				ANCOVAS Standardized Regression Coefficients			
		CA		CO		CT		NC		TOTAL				State x		%	%	
		NP	P	NP	P	NP	P	NP	P		R^2	State	Profit	Profit	R^2	Subsidized	Infant	SA Care
N		51	49	50	50	49	52	50	50	401								
Years in Operation	Mean	15.61	14.35	14.86	9.62	19.49	8.33	14.94	9.80	13.34	.08	1.2	23.1***	3.0*	.13	.14**	-.14**	.07
	SD	9.86	11.55	16.30	6.83	18.75	5.33	12.14	8.30	12.30			NP>P	CA NP=P CT NP>P				
Hours Open per Day	Mean	10.95	11.28	11.39	11.73	10.11	10.63	11.28	11.61	11.12	.21	29.2***	14.9***	.2	.25	-.10*	.11*	.19**
	SD	.87	.93	1.19	.65	.76	.77	1.64	.72	1.10		CO, NC>CA>CT	P>NP					
CURRICULUM Enrichment Curriculum$^{(1)}$	Prop.	.27	.29	.20	.18	.14	.13	.08	.10	.17		13.0* CA>NC	.0	.2		-.69	.50	-.14
Religious Curriculum$^{(1)}$	Prop.	.25	.04	.16	.00	.02	.00	.12	.02	.08								
Proportion of Subsidized Children	Mean	.31	.02	.36	.19	.36	.10	.35	.20	.23	.19	2.0	40.1***	.1	.19		.06	-.09
	SD	.43	.03	.37	.19	.40	.13	.39	.20	.32			NP>P					
ACCREDITATION NAEYC Accreditation	Prop	.06	.02	.04	.16	.14	.16	.04	.00	.08								

*** p<.001
** p<.01
* p<.05

%Subsidized = % of Enrollment that is Subsidized
% Infant = % of Enrollment that are Infant-Toddlers
SA Care = Care of School-Aged Children

1: Logistic regression used - chi-square tests and unstandardized coefficients are reported.

Table 4.2

Ethnicity of Children and Staff

		MEANS BY STATE AND SECTOR									ANOVAS F-tests				ANCOVAS Standardized Regression Coefficients			
		CA		CO		CT		NC		TOTAL								
		NP	P	NP	P	NP	P	NP	P		R^2	State	Profit	State x Profit	R^2	% Subsidized	% Infant	SA Care
N		51	49	50	50	49	52	50	50	401								
ETHNICITY OF CHILDREN																		
% White	Mean SD	41.45 34.93	63.04 27.83	63.86 32.89	80.67 17.91	63.17 34.54	88.25 18.66	60.52 40.30	69.78 27.15	66.41 32.71	.21	9.7*** CA<Others	27.7*** P>NP	2	43	-.56***	.01	.06
% Asian	Mean SD	10.69 17.89	11.51 16.21	1.64 2.06	2.17 3.22	1.56 2.72	1.22 2.23	0.58 1.20	0.36 0.94	3.71 9.67	.21	19.4*** CA>Others	.1	.1	.23	-.14**	.08	-.10
% Black	Mean SD	19.80 30.33	9.20 18.50	8.05 15.33	7.99 14.07	24.64 32.87	6.91 13.55	37.42 41.26	28.50 26.88	17.77 27.86	.20	9.8*** NC>Others	12.2*** NP>P	1.6	.38	.51***	.03	.04
% Latino	Mean SD	24.02 28.90	11.35 13.49	23.37 26.57	8.06 10.42	7.44 11.14	1.39 2.49	0.52 1.11	0.56 1.58	9.58 17.97	.24	14.2*** CA,CO>CT,NC	14.1*** NP>P	1.9	.35	.33***	-.03	-.04
ETHNICITY OF STAFF																		
% White	Mean SD	44.63 31.30	53.27 30.50	71.36 28.85	84.53 18.84	79.90 26.54	94.38 15.85	57.34 41.54	70.74 30.67	69.60 32.79	.23	33.3*** CT>CO>NC>CA	18.5*** P>NP	2	.42	-.45***	.08	.02
% Asian	Mean SD	5.78 10.47	12.37 22.56	.97 2.65	.25 1.24	.29 2.04	.20 1.03	.00 .00	.00 .00	2.46 9.67	.18	24.9*** CA>OTHERS	2.7	3.8* CA: P>NP	.20	-.05	-.08	-.10
% Black	Mean SD	20.99 27.70	11.20 19.14	6.58 14.59	4.13 7.96	12.89 22.02	3.73 15.20	41.86 42.02	28.57 30.41	16.21 27.38	.21	30.0*** NC>CA>CO,CT	12.5*** NP>P	.9	.36	.40***	.08	.04
% Latino	Mean SD	26.00 24.54	17.79 13.19	20.29 24.85	10.40 12.99	5.50 12.39	1.59 5.06	.60 2.49	.27 1.50	10.29 17.41	.29	46.1*** CA>CO>CT,NC	14.3*** NP>P	2.1	.36	.25***	.11*	.00

*** p<.001
** p<.01
* p<.05

%Subsidized = % of Enrollment that is Subsidized
% Infant = % of Enrollment that are Infant-Toddlers
SA Care = Care of School-Aged Children

Table 4.3

Administrators' Background and Leadership Effectiveness

		MEANS BY STATE AND SECTOR									ANOVAS F-tests				ANCOVAS Standardized Regression Coefficients			
		CA		CO		CT		NC		TOTAL								
		NP	P	NP	P	NP	P	NP	P		R^2	State	Profit	State x Profit	R^2	% Subsidized	% Infant	SA Care
ADMINISTRATOR'S EDUCATION & EXPERIENCE																		
N		49	48	48	49	47	50	50	50	391								
Education	Mean	15.46	15.24	16.55	16.01	16.27	15.94	16.00	14.32	15.72	.06	4.5**	7.2**	1.7	.07	.02	-.11	-.05
	SD	3.65	2.97	1.56	1.55	2.90	1.92	2.03	2.82	2.59		CO, CT>NC, CA						
													NP>P					
ECCE	Mean	8.67	7.46	8.19	8.37	8.82	8.08	8.58	7.28	8.18	.05	1.5	9.5***	2.	.05	-.02	-.03	-.06
	SD	2.08	2.26	2.20	2.51	2.60	2.62	2.24	2.42	2.41			NP>P					
Age	Mean	42.64	41.40	40.19	37.68	43.98	40.95	42.46	39.33	41.07	.03	2.3	5.8*	2	.05	.06	-.10	-.12
	SD	11.72	11.92	8.36	10.77	9.36	8.44	9.46	10.73	10.26			NP>P					
Tenure	Mean	8.2	8.1	5.5	4.6	9.7	6.5	8.4	6.3	7.1	.06	5.0**	6.1*	1.1	.07	.00	-.11*	-.02
	SD	6.2	7.7	6.4	4.2	6.9	3.8	6.8	7.4	6.5		CA, CT, NC>CO						
													NP>P					
Experience	Mean	9.39	6.48	9.41	8.92	6.02	6.84	8.75	5.54	7.67	.05	3.0*	4.6*	2.1	.06	.05	.00	-.09
	SD	6.94	5.88	5.69	5.63	7.23	7.17	7.93	6.47	6.78		CO>CT, NC						
													NP>P					
ADMINISTRATIVE EFFECTIVENESS																		
N		49	49	48	49	47	50	50	46	388								
Center Organization	Mean	8.04	7.31	7.81	6.61	8.59	8.75	8.79	6.12	7.76	.05	2.8*	7.0**	1.7	.08	-.11*	.08	-.12*
	SD	3.66	3.77	4.04	3.36	4.53	3.89	4.35	4.47	4.09		CT>CA, CO, NC						
													NP>P					
Professional Involvement	Mean	9.49	6.91	8.01	6.76	10.30	7.95	9.75	6.73	8.24	.07	2.4	16.7***	.6	.07	.04	.01	.02
	SD	5.03	5.14	5.02	4.97	4.55	5.46	4.80	5.43	5.19			NP>P					
Curriculum & Teaching Support	Mean	7.57	8.60	9.41	8.73	9.33	8.43	8.18	7.57	8.48	.03	2.3	.5	1.1	.04	.09	-.01	-.08
	SD	4.35	3.90	3.74	4.20	3.97	3.97	4.00	3.80	4.01								
Community Involvement	Mean	7.29	4.94	7.63	5.06	8.56	6.22	7.18	4.76	6.46	.07	1.3	22.3***	.0	.08	.09	.07	-.02
	SD	5.05	4.55	5.44	4.51	4.46	4.85	5.10	4.60	4.97			NP>P					

*** $p < .001$
** $p < .01$
* $p < .05$

%Subsidized = % of Enrollment that is Subsidized
% Infant = % of Enrollment that are Infant-Toddlers
SA Care = Care of School-Aged Children

Table 4.4

Number & Types of Services

		MEANS BY STATE AND SECTOR									ANOVAS F-tests				ANCOVAS Standardized Regression Coefficients			
		CA		CO		CT		NC		TOTAL								
		NP	P	NP	P	NP	P	NP	P		R^2	State	Profit	State x Profit	R^2	% Subsidized	% Infant	SA Care
N		51	49	50	50	49	52	50	50	401								
SERVICES # of Special Services Provided	Mean	3.94	3.93	5.51	4.94	3.94	3.38	6.70	5.12	4.71	.16	18.9***	7.6**	1.8	.27	.34***	-.13**	.04
	SD	2.38	1.81	3.09	1.98	2.18	1.92	2.84	2.62	2.59		NC>CO>CA>CT	NP>P					
PROGRAMS # of Programs Offered(1)	Mean	3.16	3.82	4.28	4.92	2.98	4.06	2.72	3.80	3.72	.21	20.4***	42.3***	.9	.58	-.02	.00	.66***
	SD	1.35	1.30	1.57	1.03	1.25	1.23	1.55	1.29	1.49		CO>Others	P>NP					
Part-Day Programs(1)	Prop	.82	.88	.78	.96	.80	.94	.40	.70	.79		38.0*** NC<Others	15.7*** P>NP	2.6		2.2***	-.1	.5**
Part-Day Extended Care(1)	Prop	.50	.78	.62	.88	.47	.81	.18	.26	.56		59.2*** NC<Others	24.8*** P>NP	3.2		.9*	.9	.7***
Before & After School Care(1)	Prop	.30	.41	.64	.92	.41	.73	.52	.82	.60		39.2*** CT, NC>CO>CA	28.3*** P>NP	4.6		.7	3.8***	NA
Summer Camp Program(1)	Prop	.18	.45	.58	.74	.27	.48	.44	.78	.49		35.5*** CO, NC>CA, CT	25.7*** P>NP	1.9		1.6**	2.4**	1.3***

*** $p<.001$
** $p<.01$
* $p<.05$

%Subsidized = % of Enrollment that is Subsidized
% Infant = % of Enrollment that are Infant-Toddlers
SA Care = Care of School-Aged Children

1: Logistic regression used - chi-square tests and unstandardized coefficients are reported.

Table 4.5

Physical Space

		MEANS BY STATE AND SECTOR									ANOVAS F-tests				ANCOVAS Standardized Regression Coefficients			
		CA		CO		CT		NC		TOTAL				State x		%	%	
		NP	P	NP	P	NP	P	NP	P		R^2	State	Profit	Profit	R^2	Subsidized	Infant	SA Care
N		46	44	41	43	41	45	41	45	346								
OVERALL SIZE																		
Inside Square	Mean	4364	5442	6040	5037	4055	3658	6126	5031	4950	.06	5.2**	.1	1.7	.08	-.02	.08	.14*
Footage	SD	4080	3884	6129	2204	2739	4159	5138	2623	4088		CT<Others						
Inside Space Used	Mean	3173	4383	4318	3842	2994	2798	3854	3642	3617	.06	4.2**	.3	2.1	.08	-.06	.07	.14*
by Children	SD	2536	3161	4092	2012	2198	3916	2651	2079	2951		CT<Others						
Outside Space	Mean	7782	12085	11305	7105	7827	6696	11857	11032	9439	.06	4.2**	.0	2.3	.12	-.09	-.16**	.12*
Used by Children	SD	7432	13973	16335	5867	8676	8457	12627	8505	10822		CT<NC, CA						
Outside Space	Mean	468.2	240.5	574.2	469	12.54	79.24	131.7	251.4	275.5	.14	16.5***	.0	.7	.14	.04	-.01	.07
Shaded/Waterproof	SD	1689	489.2	904	1009	211.4	63.28	415.2	970	892.9		CO>CA>CT, NC						
AVERAGE SIZE PER CHILD																		
Inside Space	Mean	63.13	68.22	111.0	70.84	98.26	92.31	91.81	64.98	82.00	.06	3.5*	5.5*	2.0	.14	.13*	.28***	.07
per Child	SD	32.37	44.93	94.00	45.04	56.84	114.6	64.77	36.49	68.17	CT, CO>CA		NP>P					
Outside Space	Mean	117.7	159.9	212.0	113.2	188.9	182.9	183.5	133.0	160.5	.03	1.0	2.1	2.4	.06	.03	-.13*	.08
per Child	SD	90.51	208.2	276.1	109.2	174.4	251.8	165.9	82.73	183.5								
SPACE SUMMARY SCORE																		
Tot Square	Mean	9.09	9.49	9.39	9.27	9.12	8.97	9.52	9.45	9.28	.07	5.2**	.1	2.7*	.12	-.11	-.08	.17**
Footage (log)	SD	.83	.77	.84	.49	.70	.72	.74	.75	.76		CT<Others		CA P>NP Others NP>P				
Appearance/Safety	Mean	.84	.87	.88	.81	.84	.85	.73	.67	.81	.19	22.2***	1.2	3.4*	.20	-.04	-.10	-.07
	SD	.15	.13	.11	.15	.12	.14	.15	.18	.16		NC<Others		NC, CO P>NP				

*** $p<.001$
** $p<.01$
* $p<.05$

%Subsidized = % of Enrollment that is Subsidized
% Infant = % of Enrollment that are Infant-Toddlers
SA Care = Care of School-Aged Children

Table 4.6

Volunteer Variables

		MEANS BY STATE AND SECTOR									ANOVAS F-tests				ANCOVAS Standardized Regression Coefficients			
		CA		CO		CT		NC		TOTAL								
		NP	P	NP	P	NP	P	NP	P		R^2	State	Profit	State x Profit	R^2	% Subsidized	% Infant	SA Care
N		51	49	50	50	49	52	50	50	401								
Center has Vols.⁽¹⁾	Prop.	.57	.18	.56	.34	.43	.37	.52	.16	.39		3.8	28.0*** NP>P	8.3* CA,NC:NP>P		-.26	-.90*	.06
VOLUNTEER CHARACTERISTICS																		
N		29	9	28	17	21	19	26	8	157								
# of Volunteers	Mean	2.69	4.33	2.57	1.94	4.14	2.26	4.27	3.00	3.10	.10	1.8	1.2	2.3	.15	.24***	-.08	-.05
	SD	1.54	5.70	1.91	1.56	3.20	1.45	3.77	3.25	2.84								
Vol. is Parent (proportion)	Mean	.53	.31	.23	.25	.17	.11	.28	.18	.28	.12	3.1* CA>CT, CO	1.9	.5	.14	-.05	-.17	.03
	SD	.44	.39	.37	.41	.31	.27	.41	.36	.39								
Total Vol Hrs/Mo	Mean	186.6	131.1	111.0	78.75	121.5	51.42	169.5	75.00	124.7	.04	.7	2.5	.1	.08	.21*	-.04	-.07
	SD	371.2	92.89	177.2	93.93	115.2	4.11	297.6	87.69	223.7								
Estimated Worth of Vol Services	Mean	1072	851.6	646.9	514.9	950.9	745.0	901.9	294.2	799.6	.04	.9	2.1	.3	.08	.21*	.10	-.05
	SD	1719	508.8	840.5	653.0	752.5	1034	1378	347.3	1123								
# OF VOL. BY SERVICES PROVIDED																		
Accounting	Mean	.14	.38	.14	.25	.50	.26	.08	.00	.21								
	SD	.35	1.06	.45	.58	1.40	.65	.28	.00	.69								
Teaching Specials (Music)	Mean	.10	.25	.21	.06	.15	.05	.25	.00	.14								
	SD	.31	.46	.50	.25	.37	.23	.74	.00	.44								
Professional Services	Mean	.07	.13	.07	.00	.19	.32	.08	.13	.12								
	SD	.26	.35	.26	.00	.51	1.00	.41	.35	.47								
Classroom Teacher	Mean	03	.13	.18	.00	.10	.05	.42	.88	.18								
	SD	.19	.35	.61	.00	.31	.23	1.28	1.73	.73								
Teacher Aide	Mean	1.48	1.13	1.18	1.44	2.40	1.26	3.04	1.88	1.76	.10	1.9	2.5	1.0	.16	.18*	-.14	-.17
	SD	1.35	1.13	1.54	1.82	2.11	1.45	3.25	3.56	2.15								
Chaperone - Field Trips	Mean	24	.38	.18	.00	.25	.37	.92	.13	33	07	.9	.9	1.1	.08	.12	.03	.02
	SD	64	1.06	.61	.00	.91	1.16	1.95	.35	1.06								
Fund Raising	Mean	.59	.63	.11	.00	.10	.05	.21	.00	.22								
	SD	.78	1.06	.31	.00	.31	.23	.72	.00	.57								
Governing Board Member	Mean	.17	.88	.14	.00	.65	.00	.25	.00	.23								
	SD	.38	1.46	.36	.00	1.42	.00	.61	.00	.72								

*** $p<.001$
** $p<.01$
* $p<.05$
1: Logistic regression used - chi-square tests and unstandardized coefficients are reported.

%Subsidized = % of Enrollment that is Subsidized
% Infant = % of Enrollment that are Infant-Toddlers
SA Care = Care of School-Aged Children

Table 4.6 Continued

Volunteer Variables

		MEANS BY STATE AND SECTOR									ANOVAS F-tests				ANCOVAS Standardized Regression Coefficients			
		CA		CO		CT		NC		TOTAL								
		NP	P	NP	P	NP	P	NP	P		R²	State	Profit	State x Profit	R²	% Subsidized	% Infant	SA Care
# OF VOLS. BY SERV. PROVIDED CONT'D																		
N		28	9	28	17	21	19	26	8	157								
Maintenance Worker	Mean	.24	.75	.25	.19	.55	.53	.08	.25	.32	.05	1.5	.9	.7	.07	.07	-.04	-.01
	SD	.44	1.75	.65	.40	1.57	1.02	.28	.46	.87								
Secretarial	Mean	.38	.13	.21	.06	.10	.42	.04	.00	.20								
	SD	.78	.35	.50	.25	.31	1.17	.20	.00	.61								
Works with Special Needs Children	Mean	.03	.00	.14	.00	.15	.32	.46	.00	.16								
	SD	.19	.00	.52	.00	.67	1.16	1.53	.00	.81								
Other	Mean	.14	.13	.11	.00	.20	.11	.00	.00	.09								
	SD	.44	.35	.42	.00	.62	.32	.00	.00	.37								
# OF VOLS. BY OCCUPATION																		
Housewife	Mean	.55	.67	.46	.59	.50	.11	1.08	.13	.55	.04	.3	1.1	.9	.10	.14	-.13	-.18
	SD	.69	.82	1.00	1.80	1.19	.32	2.64	.35	1.43								
Student or Intern	Mean	.83	.67	.64	.76	1.25	.74	1.42	2.25	1.00	.06	2.7* NC>Others	1.1	.9	.09	.15	-.08	-.08
	SD	1.31	.82	.87	.66	2.10	1.05	2.30	3.41	1.67								
Manager or Professional	Mean	.66	2.17	.46	.29	.76	.79	.69	.25	.66	.09	4.0** CA>Others	1.2	3.2* CA: P>NP	.09	-.08	.06	-.02
	SD	1.26	2.40	.92	.47	1.00	1.32	1.26	.46	1.17								
Technicians, Sales & Administration	Mean	.21	.83	.11	.00	.15	.11	.27	.13	.18								
	SD	.41	2.04	.31	.00	.37	.32	1.19	.35	.69								
Services	Mean	.07	.00	.14	.06	.15	.00	.04	.00	.07								
	SD	.26	.00	.36	.24	.49	.00	.20	.00	.28								
Skilled Labor	Mean	.00	.83	.07	.06	.05	.00	.15	.13	.09								
	SD	.00	1.60	.26	.24	.22	.00	.46	.35	.42								
Unskilled Labor	Mean	.03	.50	.00	.00	.30	.05	.00	.13	.08								
	SD	.19	1.22	.00	.00	1.13	.23	.00	.35	.49								
Retired	Mean	.34	.17	.64	.12	.95	.47	.58	.00	.48	.06	1.3	5.1* NP>P	.2	.11	.22*	.06	.03
	SD	.67	.41	1.06	.33	1.82	.61	1.30	.00	1.05								

*** p<.001
** p<.01
* p<.05

%Subsidized = % of Enrollment that is Subsidized
% Infant = % of Enrollment that are Infant-Toddlers
SA Care = Care of School-Aged Children

Table 4.7

Parental Involvement

		MEANS BY STATE AND SECTOR									ANOVAS F-tests				ANCOVAS Standardized Regression Coefficients			
		CA		CO		CT		NC		TOTAL								
		NP	P	NP	P	NP	P	NP	P		R^2	State	Profit	State x Profit	R^2	% Subsidized	% Infant	SA Care
N		51	49	50	50	49	52	50	50	401								
Degree of Parent Participation Encouraged$^{(1)}$	Mean	1.20	.88	.86	.62	.96	.87	1.28	.47	.89		11.7	19.2**	10.4		7.6	.10	5.6
	SD	.98	.97	.97	.88	.84	.93	1.01	.87	.96			NP>P					
Parent Involvement Score	Mean	6.63	5.10	6.10	5.14	6.45	4.53	5.80	4.64	5.55	.11	1.6	42.4***	1.0	.12	.07	-.01	-.03
	SD	2.10	2.27	2.52	2.25	2.19	1.79	2.06	1.84	2.25			NP>P					

*** $p < .001$
** $p < .01$
* $p < .05$

%Subsidized = % of Enrollment that is Subsidized
% Infant = % of Enrollment that are Infant-Toddlers
SA Care = Care of School-Aged Children

1. Logistic regression: chi-square tests are reported.

Table 4.8

New Center Positions

		MEANS BY STATE AND SECTOR									ANOVAS F-tests				ANCOVAS Standardized Regression Coefficients			
		CA		CO		CT		NC		TOTAL				State x		%	%	
		NP	P	NP	P	NP	P	NP	P		R^2	State	Profit	Profit	R^2	Subsidized	Infant	SA Care
% Change	N	51	49	50	50	49	52	50	50	401								
Enroment from	Mean	1.99	3.18	7.16	23.15	5.55	6.37	4.39	6.37	7.25	.06	4.2**	4.1*	2.1	.06	-.03	.03	.07
Last Year	SD	17.34	25.06	28.39	34.59	34.32	22.89	17.56	20.28	26.32		CO>Others	P>NP					
NEW STAFF POSITIONS																		
Net FTE Positions	N	49	46	44	45	46	46	42	39	357	.06	4.73**	4.92*	.8	.08	.28*	.08	.03
Added Last Year	Mean	.37	.43	1.01	1.73	.35	.58	.49	1.33	.77		CO>CA, CT	P>NP					
	SD	2.34	2.05	1.75	2.17	1.78	1.16	1.12	2.82	2.00								
Net FTE Teachers	N	36	34	27	28	28	28	31	25	237	.08	3.94**	7.01**	1.25	.10	.07	.12	.04
Added Last Year	Mean	.20	.37	.77	1.15	.06	.47	.39	1.59	.59		CO, NC>CA, CT						
	SD	1.19	1.27	1.22	1.35	1.36	1.19	.83	3.26	1.60			P>NP					
Net FTE Teacher	N	31	22	22	30	25	19	26	17	192	.09	4.35**	1.31	.53	.12	.16*	.07	.09
Aides Added	Mean	.39	.23	.81	1.31	.37	.62	-.10	.25	.50		CO>Others						
Last Year	SD	1.70	1.77	1.17	1.50	1.66	1.26	.68	.46	1.43								
Net FTE Teacher	N	18	20	12	12	12	6	20	14	114	.13	3.99**	.44	1.04	.17	.21*	.03	.02
Directors Added	Mean	-.17	.05	.25	.21	.00	.00	.00	.00	.03		CO>Others						
Last Year	SD	.51	.22	.45	.58	.00	.00	.00	.00	.34								

*** p<.001
** p<.01
* p<.05

%Subsidized = % of Enrollment that is Subsidized
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SA Care = Care of School-Aged Children

Chapter 5

Center Structure: Staff Policies and Characteristics

by SUZANNE W. HELBURN

OVERVIEW

This chapter reports on wages, hours, benefits, staff training, forecast wages and foregone earnings, and turnover of staff by occupation. It also describes staff characteristics, which, in addition to their intrinsic interest, are suggestive of wage policy and hiring practices. Procedures for reporting means by state, sector, and state x sector are the same as in other chapters in Part 2. In cases where categorical variables are reported, Chi Square tests and logistic regressions were used to test significant differences. Results are compared to those from the National Child Care Staffing Study (NCCSS). The conclusions include a discussion of what these results might imply about the functioning of the ECE labor market and causes of low wages.

The data come from two sources: the Director Interview and the Staff Questionnaires distributed to staff members present in the classrooms that were observed in the study. Data provided by directors included the following information for each member of the teaching staff (4920 staff members): job title, age, gender, ethnic or racial status, years of education, highest level of ECE training, years of prior experience in ECE, months of tenure in the center, hours per week worked at the center, and wage.

Staff Questionnaires were distributed to teaching staff members working in the rooms sampled in the study; 1410 questionnaires were returned. The questionnaire included 24 questions related to the staff member's family characteristics, ECE and other work experience, use of child care services at the center, and expectations about continued work in ECE. Comparisons of questionnaire responses with information provided by directors indicate two major sources of bias. First, a larger percent of questionnaire respondents were full-time (worked 20 hours a week or more), 93% as compared to 78% reported by directors. Second, a significantly larger percent of respondents were assistants (41% compared to 28% reported by directors). Levels of education and ethnic/racial composition were similar in the two samples. Furthermore, staff questionnaire response rates were similar across states.

RESULTS

STAFF WAGES AND HOURS

Wages

In the Director Interview, wage and salary data were collected for seven categories of staff: teachers, assistant teachers, teacher-directors, administrative directors, educational coordinators, specialists, and owner-operators. Table 5.1 reports mean center wage rates, weighted by number of hours each staff member worked per week, of teachers, assistant teachers, teacher-directors, all teaching staff (the sum of these three categories), and administrative staff (including administrative directors, educational coordinators, specialists, and owner-operators).

Table 5.1 also reports mean wage rates from data collected in the Staff Questionnaires for staff members working in the rooms sampled in this study, and these means are also reported. Data from the two sources are not quite comparable for two reasons. First, mean wages reported in the Staff Questionnaires were not weighted by the number of hours worked by the staff member, so they are not strictly comparable to the data reported by the directors. Second, weighted means per center were not calculated, because staff questionnaires were not returned for all centers, and only one teacher or assistant teacher questionnaire was returned for some centers.

Director Data. According to directors' reports, the average wage for all teaching staff was $6.89 per hour, or $14,331 per year for a 40-hour work week. Averages by state and sector ranged from $5.14 per hour in North Carolina for-profit centers to $8.96 per hour in Connecticut nonprofit centers. For the whole sample, mean teacher wage was $7.22 per hour ($15,018 per year), mean wage for assistants was $5.70 per hour ($11,856 per year), mean teacher-director wage was $8.94 per hour ($18,595 per year), and mean wage for administration and special positions was $11.45 ($23,816 per year). There were very large differences by states, partly due to differences in cost of living. In all categories of wages, California and Connecticut wages were higher than wages in Colorado and North Carolina. The mean wage for assistants was significantly higher in Connecticut than in California. The teacher-director wage was higher in Colorado than in North Carolina.

State-level wage differences clearly reflect differences in cost-of-living across the four states, although it is hard to quantify, because of the lack of availability of appropriate regional deflators. To get some indication of differences in real wages, nominal wages for teaching staff reported by directors (Table 5.1) were deflated by a regional cost-of-living index created by the U. S. Chamber of Commerce to identify differences in cost-of-living for middle managers in certain metropolitan areas (*Statistical Abstract of the U.S.*, 1992, p. 474). Unfortunately, they do not include a region in Connecticut, so the Boston deflator was substituted. Results are shown in Table 5.2. Deflating by the regional cost-of-living indices drastically reduced the state-level wage differentials. Real wages for both nonprofit and for-profit centers were highest in California rather than in Connecticut. Real wages in Connecticut and Colorado were quite similar. Only in North Carolina were real wages considerably lower than in the other states.

Table 5.2 also shows the results of another kind of deflation to eliminate the effects of regional differences in wages rather than differences in consumer prices. It uses a wage index constructed to measure wage differentials in the four states for individuals with characteristics similar to the ECE staff in our sample. Using a wage equation constructed from the Current Population Statistics (CPS) data (described below in the discussion of foregone wages), for each state estimations were made of the wage that the average staff person in the sample - with the mean age (34), education (14.1 years), ethnic or racial characteristics, and gender - would be able to earn. These wages were converted into wage indices by dividing the wage for each state by the Colorado wage (which approximates the national average) used as the base wage. The indices are shown in Table 5.2 and were used to deflate nominal mean teaching staff wages.

Deflating nominal wages by this wage index eliminates differences in wages in ECE across states due to differences in state labor market conditions for jobs using persons with characteristics similar to ECE staff. The indices describe labor market characteristics rather than just cost-of-living. If the indices were similar to the cost-of-living indices this would indicate that differences in wages across states mainly reflect cost-of-living differences. This seems generally true except for Connecticut which shows a high cost-of-living adjustment but only a modest adjustment for wages. The Connecticut indices indicate that in that state wages in relatively low-skilled jobs do not match the higher cost-of-living, a reasonable possibility given the high per capita income in the state. What this suggests is that in Connecticut ECE center jobs pay better wages relative to other jobs employing people with the same education level and some of the same characteristics as ECE teaching staff. This finding may help explain the higher quality of Connecticut centers, since it suggests that Connecticut ECE staff receive higher wages than other workers with comparable characteristics. Notice that the deflated wages in Colorado and North Carolina are lower than those in California and Connecticut.

These results should be treated as highly tentative, because it is not clear how much confidence one can put in either the regional cost-of-living indices or the wage indices. First is the problem of identifying a cost-of-living deflator for Connecticut. Second, the Chamber of Commerce regional indices may be inappropriate to use. If there are important differences in consumption patterns between highly paid middle managers and low paid ECE staff, then the Chamber of Commerce indices do not accurately estimate regional cost-of-living differences for child care workers. Finally, because the CPS data do not include a work experience variable, this factor is not adequately accounted for in the wage equation used to construct the wage indices. These results, however, when combined with those related to determinants of quality, are suggestive of the importance of higher wages to the provision of good-quality ECE.

Wages in nonprofit centers were significantly higher than wages in for-profit centers. For the whole sample, nonprofits paid teaching staff $.97 per hour more than was paid in for-profit centers. The differential increased with the level of responsibility; the wage differential for assistants was $.58 per hour compared to $1.41 per hour for administration positions. However, wage differentials between nonprofit and for-profit centers varied among states. Connecticut had the largest differential, $1.75 per hour, Colorado had $.90 per hour, North Carolina had $.72 per hour, and California had $.52 per hour.

Staff Questionnaire Wage Data. Mean hourly wages given by staff were slightly higher than those provided by directors, and there was more variability in the data. Mean teacher wages reported by staff was $7.40 per hour compared to $7.22 reported by directors, and $6.23 for assistants compared to $5.70 reported by directors. Although the mean wage for all teaching staff reported by staff members was very close to director reports ($6.92 reported by staff compared to $6.89 by directors), when calculated using weights based on the staff composition reported by directors, the mean for all teaching staff was $7.07 per hour. As with the Director Interview data, wages in California and Connecticut were significantly higher than in Colorado and North Carolina. For all teaching staff, Colorado wages were significantly higher than those in North Carolina. Nonprofit wages were again significantly higher than wages paid by for-profit centers. However, in contrast to data reported by directors, there was a significant state x sector interaction effect for wages of assistant teachers and aides; wages in for-profit centers were slightly higher than wages in nonprofit centers in California and they were almost identical in the two sectors in Colorado.

Effects of Scope. Both sets of data showed similar effects of center scope variables on wages. Wages for teachers were significantly higher in centers with a larger percentage of subsidized children. They were inversely related to the percent of FTE made up of infants/toddlers for teaching staff and administrative employees, and to the presence of a school-aged program for teaching staff.

Wage Increases

Directors were asked how much, on average, they raised wages and salaries in the last year. Table 5.3 shows that half of the centers gave wage increases of 3% (the rate of inflation) or less; 21% of centers gave no wage increase at all; 35% raised wages between 3% and 6%; and 12% raised wages more than 6%.

Overall, the Chi Square and logistic regressions revealed significant state differences in wage increases in the previous year. A higher percent of nonprofit than for-profit centers gave no raises. A higher percent of Connecticut centers gave no raises than in Colorado and North Carolina. Colorado and California centers were less likely than North Carolina centers to raise wages by 3% or less. Colorado was more likely to have raised salaries more than 6% than centers in the other states. Centers with a greater percentage of subsidized children were more likely to raise wages by a higher percentage. The higher the percent of subsidized children, the less likely it was for the center to have given no general raise, and the more likely it was to have raised wages more than 6%.

These wage increases seem to reflect conditions in the labor markets in the respective states. In 1992 unemployment rates were higher than the national average of 7.4% (*Economic Report of the President*, 1993, Table B-38) in California and Connecticut, lower than average in Colorado and North Carolina: 9.1% in California, 7.5% in Connecticut, and 5.9% in Colorado and North Carolina. The generally higher wage increases in Colorado as compared to North Carolina may have been due to the fact that non ECE wages in North Carolina are relatively lower in general, so that ECE employees were not at as much of a disadvantage in that state as in Colorado.

To find out the extent to which centers raised wages in order to recruit staff, directors were asked if they offered higher wages or salaries to their most recently hired staff members compared to wages earned by present staff with comparable experience, training, and responsibilities. For the whole sample, 18% of directors reported that they had offered higher wages; percentages ranged from 8% of Colorado nonprofit centers to 27% of Connecticut for-profit centers. There were no significant differences in response by state or scope of program; however, for-profit centers were more likely to have raised wages for this purpose than nonprofits.

HOURS WORKED PER WEEK

Table 5.4 shows the mean hours worked per week for different types of staff, as reported by directors and staff members who completed the Staff Questionnaire.

Directors reported that, on average, teachers worked 35.6 hours per week, assistants worked 27.6 hours a week, and teacher-directors worked 39.8 hours per week. There was considerable variation among centers in the same category, particularly so for assistants. For Colorado and California, teachers in for-profit centers worked significantly more hours than did teachers in nonprofit centers. For Connecticut and North Carolina, teachers in nonprofit centers worked significantly more hours per week than did teachers in for-profit centers. For both teachers and assistants, hours worked per week were positively related to the percent of subsidized children and the percent of infants/toddlers served by the center.

Staff reports of hours worked differed somewhat from director reports. The average work week reported by teachers was 36.7 hours per week, 33.2 hours per week for assistants, and 35.3 hours per week for teacher-directors. Teacher hours per week were higher in Colorado and North Carolina than in California and Connecticut. Assistants hours were higher in Colorado, North Carolina, and Connecticut than in California. For all teaching staff, those in for-profit centers reported more hours per week than staff in nonprofits.

Centers differed somewhat in their use of part-time staff working less than 20 hours per week. Table 5.4 shows that the mean percentage of part-time staff for the whole sample was 22%. Nonprofit centers used significantly more part-timers than did for-profit centers (24% compared to 20%). Also, centers with a higher percent of infants/toddlers were less likely to use part-time staff.

Centers differed quite substantially in the ratio of FTE teachers to FTE assistants. The mean teacher/assistants ratio was 3.62 teachers to one assistant, but the means varied from 1.95 in Connecticut nonprofit centers to 8.5 in North Carolina for-profit centers. There were significant differences with respect to profit status, and a significant state x profit interaction. For-profit centers used a higher ratio of teachers to assistants as compared to nonprofit centers (5.4 compared to 2.3). Both Colorado and Connecticut had lower ratios than North Carolina. The difference in ratios between nonprofit and for-profit centers was much larger in North Carolina than in the other three states. Finally, centers with a larger percent of subsidized children tended to have lower teacher/assistants ratios.

The large differences in practices in the combination of teachers to assistants is hard to interpret, but may indicate differences in definitions of the teacher and assistants job descriptions. It could also indicate differences in room size such that centers with small rooms use only a teacher. It could also indicate, for instance, more use of assistants in rooms with lower child/staff ratios.

STAFF BENEFITS

Directors were asked to identify from a list of benefits and working conditions the items that were provided for full-time teachers and assistant teachers, and part-time employees. To report results, the list was divided into 8 health and retirement related benefits and 10 working conditions. The 8 health- and retirement-related benefits were:

- at least partially paid retirement plan
- life insurance
- paid maternity/paternity leave
- unpaid maternity/paternity leave
- fully paid health insurance
- partially paid health insurance
- paid health insurance for dependents
- partially paid dental insurance.

The 12 working conditions included:

- paid sick leave or personal leave
- paid vacations
- paid to attend staff meetings and training
- compensation for overtime
- flexible hours
- written job description
- written contract
- written salary schedule
- ability to bring child to work
- reduced child care fees
- service awards or bonuses
- paid meals

For each center, the number of benefits was tallied and the means are reported in Tables 5.5 to 5.7. To provide information on major benefits, Tables 5.5 to 5.7 also report the percent of centers that provided paid maternity or paternity leave, at least partially paid health insurance, and reduced child care fees. Since these dependent variables are categorical variables, Chi Square and logistic functions were used to identify significant differences in the proportions.

Centers provided more benefits and working conditions to full-time teachers than to full-time assistants, and more benefits and working conditions to full-time assistants than to part-time employees.

Retirement and Health Benefits

For teachers, the mean number of retirement and health benefits was 2.8 out of 8, and ranged from 1.92 for California for-profit centers to 3.86 for Connecticut nonprofit centers. Comparable means for full-time assistants, and part-time workers was 2.18 and .9, respectively. Colorado and Connecticut centers offered significantly more of these benefits than California for full-time staff; they offered more than North Carolina for assistants; and Colorado offered more than the other states for part-time staff. Nonprofits offered more than for-profit centers. Centers with a higher percentage of subsidized children were more likely to provide health insurance for their full-time staff, and centers with a higher percentage of infants/toddlers were more likely to offer it to part-time teaching staff.

At least partially paid health insurance was provided by 64% of centers for full-time teachers, by 49% of centers for full-time assistants, and by 13% of centers for part-time staff. A larger percent of centers in Colorado and Connecticut provided at least partially paid health insurance for assistants than in California and North Carolina. A larger percent of nonprofit than for-profit centers offered coverage for full-time teachers and part-time workers, except in Colorado where the reverse was true for full-time staff. Centers with higher percentages of subsidized children were more likely to provide health insurance for their full-time staff, and centers with a higher percentage of infants/toddlers were more likely to offer it to part-time teaching staff.

Maternity Leave

Paid maternity leave was rare. The benefit was offered by only 15% of centers for teachers, by 12% of centers for full-time assistants, and by 5% of centers for part-time workers. These percentages were actually higher than for business in general where only 3% make paid maternity leave available. Nevertheless, as a sector employing mainly women, one would expect the benefit to be provided more frequently than for the population as a whole.

Child Care Discounts

The most commonly provided benefit to staff members was reduced fee child care. It was offered to full-time teachers by 74% of centers, to full-time assistants by 59% of centers, and to part-time staff by 45% of centers. The percentage of Colorado centers offering a fee discount was significantly greater than in the other three states. The proportion of Connecticut centers offering discounts to full-time teachers and part-time staff was higher than in North Carolina, and a higher percent of California centers offered discounts to part-time staff than centers in North Carolina. A significantly greater percentage of for-profit than nonprofit centers provided discounts. The higher the percentage of subsidized children in the center the less likely the center was to provide discounts. Centers serving school-aged children were more likely to provide a child care discount to staff.

Working Conditions

Certain working conditions - such as paid sick pay, paid vacations and holidays - seem to be relatively standard in ECE centers for teachers, but not as likely to be provided to full-time assistants, or to part-time staff. The number of working conditions provided by centers to full-time teachers averaged 8.18 out of 12, 6.58 to full-time assistants, and 4.64 to part-time staff. Colorado provided significantly more working conditions than did the other three states. More working conditions were provided to part-time staff working in centers with school-aged programs.

FORECAST WAGES AND FOREGONE EARNINGS

Early care and education professionals often claim that center staff actually subsidize services to children because they work for abnormally low wages, given their education, training, experience, and responsibility. In fact, the National Association for the Education of Young Children has launched a Full Cost of Care campaign to devise ways of raising wages and salaries in the industry. The National Center for the Early Childhood Workforce has organized the Worthy Wage Campaign to bring ECE center wages up to a minimum of $10 per hour. To test the existence of such subsidies, wages were forecasted for each staff person based on what the staff member could earn in other jobs for which she/he was qualified. These were then compared to the person's actual earnings. We define *forecast wages* as the wage an employee in ECE with given characteristics (e.g., gender, race, age, years of education, & location) could earn in other jobs.

Forecast Wages

To compute forecast wages, a wage equation was estimated for data for 1992 from the Current Population Statistics (CPS) files. The wage equation estimated was a linear function of gender, years of education, age, age^2, minority status, state dummy variables, and state x interaction dummy variables. Once the parameters of the equations were estimated, forecast wages for each staff person were calculated using this equation. The equation was estimated for female workers. Male workers' foregone wages were then adjusted by the average national ratio of male to female wages for people at the same education level: 1.07 for males less than 25 years old, and 1.35 for males 25 years old or more.

Mean forecast wages by state, and within state by sector, are shown in Table 5.8. For the sample as a whole, mean forecast wages were $9.76 for teachers, $8.04 for assistants, $11.31 for teacher-directors, and $12.70 for administrators and specialists. These wages, to repeat, are the wages these workers could have earned in other jobs for which they were qualified. There were highly significant state and profit status differences in means. For all job classifications, except teacher-directors, forecast wages of staff members in California were significantly higher than for staff members in Connecticut, which were higher than for staff members in Colorado, which were higher than for staff members in North Carolina. For teacher-directors, Connecticut and California mean forecast wages were higher than in Colorado which were higher than in North Carolina. Forecast wages were higher in nonprofit than for-profit centers.

When mean forecast wages for all teaching staff were deflated by their regional wage indices (see Table 5.2), most of these state and sector differences disappeared. Forecast wages ranged from $8.72 to $9.43 except in Connecticut nonprofits ($9.87) and North Carolina for-profits ($7.96). This suggests that Connecticut nonprofit centers hired relatively more qualified and North Carolina for-profits hired less qualified teaching staff than in other states.

For both teachers and assistants, forecast wages were inversely related to the percent of subsidized children. The level of forecast wages for assistants and teacher-directors tended to be lower in centers with school-aged programs.

Foregone Earnings

To estimate the foregone earnings for a given staff person, the person's actual annual salary income from child care was subtracted from his or her forecast salary earnings (excluding the value of fringe benefits). Table 5.8 shows that teachers, on average, earned $5,238 per year (almost $500 per month) less than would the average person with similar characteristics. Assistants earned $3,582 per year less, teacher-directors earned $4,348 per year less, and directors and specialists earned $3,198 less.

For teachers, Colorado foregone earnings were greater, than in California, which were greater than in Connecticut and North Carolina. For assistants, foregone earnings were significantly greater in Colorado and California than in Connecticut, which were significantly greater than in North Carolina. For teachers and assistants, they were greater in for-profit than in nonprofit centers. For teacher-directors, foregone earnings were greater in Colorado than in Connecticut. However, in Colorado and Connecticut teacher-director foregone earnings were greater in for-profit centers than in nonprofits, whereas the reverse was true in California and Connecticut. For directors and specialists, foregone earnings were greater in California and Colorado than in Connecticut, but there were no differences by sector.

Table 5.2 shows that deflating foregone earnings by the regional wage index brought California foregone earnings into line with those in Connecticut and North Carolina, thus emphasizing the relatively high foregone earnings in Colorado when regional wage differences were taken into account. Since forecast wages were not much different in Colorado compared to the other states, this was another indication of the low wages paid in Colorado, relative to the other states, for similarly educated staff.

Foregone earnings were smaller for teachers and assistants in centers with a larger percent of subsidized children. They were larger for teacher-directors in centers with school-aged programs.

High standard deviations for foregone earnings shown in Table 5.8 prompted further investigation to find out if there were a significant portion of staff in each job category which were earning close to their foregone wage, if so, what were their characteristics. The investigation shows that staff members with low or negative foregone earnings represented about 30% of assistants with foregone earnings less than $1500 per year, 27% of teachers with foregone earnings less than $2500 per year, 27% of teacher-directors with foregone earnings under $1500, and 42% of administrators with foregone earnings under $1500. Although there was a lot of variation within this group, staff members with low or negative foregone earnings tended to earn higher wages than persons with higher foregone earnings, so that their forecast wages were closer to their actual earnings. For assistants and teachers, these people also had less education and work experience prior to their present job than staff members with higher foregone earnings. They were also more likely to work at a publicly operated center.

The high standard deviations of foregone earnings within job titles suggests significant variation of forecast wages within job titles. This, in turn, implies variation in education and age within these job titles, and the possibility of differences in the meaning of these job classifications in terms of responsibility. This question will be investigated further in Chapter 7 in the discussion of reconceptualizing the early care and education work force.

The foregone earnings reported in Table 5.8 are very high, so much so that it is hard to understand why staff members would, in fact, take such large cuts in pay. Three points need to be mentioned. First, the estimates may be biased upward. For instance, these women may have less labor market experience than other women who are more attached to the labor force. Unfortunately, the CPS files did not include data on prior labor market experience, so this variable could not be included in the wage equation used to estimate forecast wages. Also, low paid occupations in ECE may attract persons with good educational qualifications who lack certain characteristics that are generally valued by employers in sectors that pay higher wages.

Second, there may be compensating economic factors which attract women to the profession. An important one for some staff members is discounts on child care; another may be convenience of work to home. Approximately 14% of the staff members who completed staff questionnaires reported they had at least one child receiving care at the center where they worked; the mean hours in care for these children was 32 hours per week. Presumably, most of the children of these staff members were receiving center services at a discount. These economic benefits would reduce the mean foregone earnings substantially. For instance, with a monthly fee of $400, a 50% discount would represent $2400 per year child care saving for one child, which represents $3320 in before tax income per year (assuming social security, federal income tax and state income taxes equal 27.7% of earned income).

Third, many economists would argue that the foregone earnings represents a negative compensating wage differential, a voluntary cut in pay by women who prefer working in child care (see chapter 2 for a discussion of this concept). Some employees may well voluntarily be taking such a cut in pay. It is nevertheless true that they are subsidizing the quality of care through the higher levels of human capital they are providing.

The Cost of Raising Teacher Wages to At Least $10 Per Hour.

As noted above, the National Center for the Early Childhood Workforce has initiated a campaign to raise ECE staff wages to $10 per hour. This would achieve two goals: to provide child care center staff with wages more in line with their skills and responsibilities, and to retain qualified staff members in the field. As an exercise, we estimated the mean cost of implementing this worthy wage objective. We estimated the cost of raising teacher wages or salaries to at least $10 per hour or to the teacher's forecast wage, whichever was higher. Table 5.9 shows results of this exercise. The mean forecast wage was $11.03 for teachers and $11.99 for teacher-directors. It is based on the assumption that staff should at least embody the characteristics which are valued at $10.00 per hour in the market and that more qualified staff should earn their market value. For our sample, the mean annual cost of raising wages to this level was about $7500 per teacher, and $5700 per teacher-director. For the approximate 2700 teachers and teacher-directors in our sample, this would require an increase in teacher wages by almost $50,000 per year per center. Given that the average center enrolled 68 FTE children, this increase would amount to $735 per child per year, or about $61 per month.

CENTER STAFF TRAINING

The director's interview included six questions related to the center's policies and financial commitment to staff training. A principal components analysis of these questions indicated that a composite variable could be formed that indicated how many and what type of staff members received in-service and off-site training. Higher scores on this composite score indicated that more staff members were receiving more training, in either in-service or off-site sessions. Three other training variables could not be reasonably summarized into composite variables. These included whether the center offered tuition reimbursement, offered time off for training, and the amount of training costs per FTE staff.

MANOVAs suggested that composite training was significantly related to state (F(12,1018)=3.2, p=.0002), but not to sector or state x sector. The only training variable to show state differences was the question about tuition reimbursement (F(3, 388)=10.9, p<.0001). Table 5.10 gives standardized mean values of the composite training variable, and five others, and reports ANOVA and ANCOVA analysis.

Of the 252 centers providing inservice training, the mean percentage of staff receiving fifteen plus hours per year of inservice training was 51%. Directors reported that a slightly smaller percentage of staff (46%) received fifteen plus hours of off-site training. The percentage receiving off-site training was higher in North Carolina than in the other states, and higher in Connecticut than in Colorado. Over half the directors, 63%, reported that their center gave some tuition reimbursement for training; and centers in North Carolina and Colorado were more likely to offer reimbursement than were centers in Connecticut or California. Most center directors (81%) reported providing released time for training. Finally, mean expenditures for staff training were reported at $122 per FTE staff person, with no significant differences by state or sector, but fairly high variation within each of these sectors.

STAFF TURNOVER

Table 5.11 summarizes information on annual staff turnover rates which were collected in the director interviews. Multivariate analyses were not performed because the sample size varied across the turnover variables as not all centers had assistants or teacher-directors. Staff turnover was relatively high among the participating centers. Overall, it ranged from 0 to 329% of the staff leaving during the prior 12 months, with a mean of 37% and standard deviation of 42%. To give meaning to turnover rates, an example helps. A turnover rate of 200% per year means that 2 people left each job and a third person currently holds each job, all in one year! Turnover rates for different job titles were as follows: teachers averaged 39%, assistants averaged 52%, and administrators averaged 16%. Thirteen percent of centers reported no turnover in the previous year. The National Staffing Study which reported an annual turnover of 41% and 7% of centers with no turnover (Ibid., p. 70).

For-profit centers experienced higher rates of turnover for the staff as a whole, teachers, assistants, and directors. Total center turnover rates were higher in North Carolina and Colorado (the two low unemployment states) than in California and Connecticut. The turnover rate among assistants was significantly higher in Colorado than in other states. For all staff and for teachers higher turnover rates were associated with a higher percentage of subsidized children enrolled. Program scope variables were not significantly related to turnover.

Directors were asked to identify the cause of staff departures. Of those staff members who left, 81% left voluntarily, 3% were laid off because of low enrollments, 3% were laid off for other reasons, and 14% were dismissed. A smaller percentage of people left voluntarily in California than in the other states. Lay-offs were mainly in California and Connecticut. There were no statistically significant regional or sector differences in dismissals. Reasons for leaving a center were not related to program scope variables, except that the percent dismissed was positively related to the percentage of infants/toddlers enrolled.

The average number of staff per center who left voluntarily is also shown on Table 5.11. A significantly larger number of staff per center left voluntarily in Colorado than in the other states, and a larger number left voluntarily in North Carolina centers than in California and Connecticut centers. Also, a larger number of staff per center left voluntarily in for-profit centers than in nonprofit centers (4.6 and 2.7, respectively). The number of staff per center who left voluntarily was higher for centers with a school-aged program. These numbers are confounded somewhat by average size of centers, which was smaller in Connecticut, and overall turnover rates, which were lower in Connecticut and California.

Relation between Turnover Rates, Wages and Center Quality.

This study does not look systematically at the relation between staff turnover rates, wage rates, and quality of the center program. However, mean wages between centers with no turnover and some turnover, along with the mean quality indices were calculated and are provided in Table 5.12. There were 51 centers of the 401 centers in the sample reporting no turnover in the last year. Mean wages at centers with no turnover were significantly higher for teachers, assistants, and teacher-directors. Teachers earned $1.50 per hour more, assistants, $1.12 per hour more, and teacher-directors $3.08 per hour more. The mean quality index was not significantly higher for centers with no turnover than with some turnover; however, it was significantly higher for the larger sample (92) of centers reporting less than or equal to a 10% annual turnover rate.

STAFF CHARACTERISTICS

Personal and Family Characteristics

Table 5.13 summarizes information on the age, gender, and marital status of staff. (Ethnic and racial characteristics of staff are reported in Chapter 4 above in order to compare the composition of staff with that of the children served.) Based on director reports, staff mean age was 34.2 years old, while mean age from the Staff Questionnaires (shown in Table 5.13) was 33.9. Both data sets indicate that staff member ages were significantly older for nonprofit centers than for-profit centers, and that staff were older in California and Connecticut than in Colorado. The director reports showed that staff also were younger in North Carolina than in California and Connecticut. Teaching staff tended to be younger the larger the percentage of infant/toddler FTE children served. The National Staffing Study reported 81% of the staff were less than 40 years old, 41% were 25 years old or younger, and 7% were less than or equal to 18 years old (Ibid., pp. 32,33). In the present study, 32% were 24 years old or less.

That ECE occupations are primarily female is borne out by these data. Both directors and staff reported that 97% of staff were female, the same percentage of females as reported in the National Staffing Study (Ibid., p. 32).

For the sample as a whole, 16% of the staff were single living alone, 19% were single living with their parents, 53% were married, 9% divorced, and 3% widowed. There were significant differences in marital status among states, by profit status, percent of subsidized children served, and percent of FTE of infants/toddlers. Individual Chi Square analyses were not carried out on each of the five alternative categories of marital status. The most obvious difference was that Colorado centers employed fewer single persons living at home.

Marital status of staff of the current study differed somewhat from the National Staffing Study where a smaller percentage of staff were married (44%). In the earlier study, slightly more than half were single: 10% were single living alone with their children, 22% lived alone without children, and 24% lived with their parents (Ibid., p. 33).

Table 5.14 shows that about half of the respondents to the Staff Questionnaire reported an average of 1.9 children living at home. There were no significant differences among states, nor according to profit status or scope of program. Overall, 28% of staff members with children at home (or 14% of the sample) used child care at the center where they worked, ranging from 16% in Connecticut nonprofit centers to 53% in Colorado and North Carolina for-profit centers. A significantly larger percent of staff used center child care in for-profit centers than nonprofits, in Colorado and North Carolina than in Connecticut, and in Colorado than in California. There was an inverse relation between proportion of staff using center child care and the percentage of subsidized children enrolled, and a positive relation with existence of school-aged child care. Finally, a mean of approximately 32 hours per week of child care services were provided per staff person using care, with no significant differences by state, profit status, or scope of program, except that staff members used more hours of care in centers with a higher percentage of infants/toddlers.

A separate analysis was completed to compare staff members making use of the staff child care discount with other staff members. On average, staff members using child care earned about $.50 per hour less than the mean wage for the sample as a whole. They were somewhat less likely to belong to a professional organization, they were more likely to be married, and were, on average, about three years younger than the average staff member. Otherwise, their characteristics were similar to other staff members - with respect to level of education, ethnicity and race, and household income.

In the Staff Questionnaire staff members were asked about income earned from other jobs and other sources, as well as about their total household income. Only 158 of the 1,423 respondents (11%) reported income from another job, with mean annual earnings of $5,359. Even fewer staff members, 77, reported they received income from other sources than wages, and the mean value of this income per recipient was $6,740. Mean household income was $26,835, but there was very large within-group variation (standard deviation of $17,567). Thus, although staff income from child care was not the only source of family income, staff members, on average, came from relatively low-income families (which suggests that in many cases they may not have lived in the same neighborhood where they worked). Although household income was significantly higher in Connecticut and California than in Colorado and North Carolina, cost-of-living adjustments all but eliminated these differentials. Mean real household income was about $23,000, a bit lower in California and bit higher in Connecticut. Interestingly, there were no effects of profit-status, indicating that both sectors hired from a similar socioeconomic pool of workers. For the only program scope variable affecting household income, household income was higher in centers with lower percentages of subsidized children.

An attempt was made to determine how dependent child care workers were on their earnings from child care. Because of difficulties with the data, it was not possible to estimate what percent of the staff depend on child care earnings as the primary source of household income. Results indicate, however, that for about half of the respondents to the Staff Questionnaire child care earnings accounted for less than half of household income. This indicates that a large percent of child care staff were the secondary earners in their families.

Finally, on average, some respondents reported considerable experience outside the early care and education field. For the whole sample, the mean number of years of experience outside the ECE field was 8.15, with a standard deviation of 7.16 years, indicating wide variation among staff members within categories of centers. There were no significant differences between means.

Staff Attachment to ECE

Table 5.15 summarizes responses to the question about the main reason they chose to work in early care and education. Only 2% said they chose the work because it was the highest paying job available to them. Most staff, 65%, responded that it was a desirable job, a chance to be with children, and a pleasant job environment; and 27% chose the field because they thought it was important work that someone needed to do. Only 2% said they chose it because of low working costs, and 4% because of flexible hours. There were no significant differences by state or sector in answers to this question.

Only 24% of respondents reported belonging to professional organizations. A larger percentage of staff belonged to such organizations in California and Connecticut than in Colorado and North Carolina, and in nonprofits than in for-profit centers. The higher the percentage of subsidized children and infants/toddlers the less likely staff were to belong to such organizations.

For the sample as a whole, 33% of the staff reported that they were likely to leave within the next year, compared to 45% in the National Staffing Study (Ibid., p. 56). Staff in centers in Connecticut reported they were less likely to leave than staff in Colorado and North Carolina. Staff in nonprofit centers considered themselves less likely to leave than staff in for-profit centers. Scope of center programs did not seem to affect staff views of staying on the job. When asked why they were likely to leave, they responded as follows: 32% for a higher paying job, 27% for a career change, 13% in order to go to school, and 27% for family reasons. That is, 72% of respondents likely to leave ECE reported they would be leaving to improve their labor market position. There were no significant differences by state or sector; however, there were significant differences in responses based on the percentage of subsidized children in the center.

SUMMARY

WAGE AND BENEFIT COMPARISONS WITH THE NATIONAL CHILD CARE STAFFING STUDY

Wages in this study as compared to wages reported in the National Child Care Staffing Study indicated that real earnings for staff did not rise between 1988 and 1993 (Whitebook et al; 1989, pp. 49,50). Mean wages for all teaching staff in 1988 were reported at $5.35 per hour; they were $5.70 per hour for teachers, and $4.67 for assistants in the National Staffing Study. The National Staffing Study collected data from Atlanta, Boston, Phoenix, and Seattle, cities that, on balance, have living costs and wages similar to the four regions in the current study. Given the 22.1% cost-of-living increase between 1988 and 1993 (*Statistical Abstract of the United States*, 1994, p.488), in 1993 prices the staffing study wages translate into $6.53 for teaching staff, $6.96 for teachers, and $5.70 for assistants in 1993 dollars. Real wages in the current study were 5% higher for all teaching staff and teachers, and exactly the same for assistants. Given the large standard deviations, these differences are statistically insignificant. Thus, similar to wages in general for the country, there was no significant increase in real wages for ECE staff in the five-year period.

Both this study and the National Child Care Staffing Study results showed that the most common benefit received by staff is reduced fee child care. In this study directors reported that 74% of centers offered this benefit to teachers and that 59% offered it to assistant teachers and aides. This was a somewhat higher percentage than reported in the Staffing Study where 59.3% of full-time staff were eligible for the benefit (Whitebook et al., 1989, p. 53). A higher percent of centers in this study also reported providing at least partially paid health insurance. In the Staffing Study 42% of full-time staff had fully or partially paid insurance (Ibid., p. 53), compared to 64% and 49% of centers in this study for teachers and assistants, respectively. Table 5.16 compares the percentage of centers providing other benefits and working conditions for full-time teaching staff in the Staffing Study and the present study (Ibid., pp.53-56).

MAJOR FINDINGS

Wages and Benefits

- Teaching staff earned a mean wage of $6.89 per hour. Although wages differed significantly by state, when regional cost-of-living differences were eliminated, most of the differential disappeared except for relatively high wages in California and somewhat lower wages in North Carolina for assistants.

- Real wages for ECE staff do not appear to have changed since 1988. Between 1992 and 1993, 21% of sampled centers gave no general pay increase, and wage increases in over half the centers failed to keep up with inflation.

- The most commonly provided benefit was reduced-fee child care: 75% of centers provided this benefit for teachers, 59% for assistants, and 45% for part-time staff. This benefit, used by 14% of staff members, can actually increase the net revenue for centers operating at less than full capacity.

- The percent of ECE centers providing major benefits was comparable to national averages for all private industry (*Statistical Abstract of the United States*, 1992, p. 416). However, the ratio of benefit costs to wages was low, 18% compared to the national average of 23%, indicating that lower wages in ECE were not compensated for by higher benefits.

- 32% of centers provided retirement benefits to full-time teachers and 24% provided them to full-time assistants, compared to 39% of companies nationally.

- 64% of centers provided at least partially paid health insurance to full-time teachers, 49% to full-time assistants, and 13% to part-time staff, compared to 52% of companies nationally.

- Pai[illegible] maternity leave was only available at 15% of centers for full-time teachers, at 12% for full-time assistants, and only at 5% for part-time workers, compared to 3% of companies nation-wide.

- Paid sick leave and paid vacations were common, provided by 85% for full-time teachers. Written contracts, however, were only used in 38% of centers for full-time teachers and in 28% of centers for assistants.

Foregone Earnings and Staff Turnover

- ECE staff, on average, earned less than the average woman with the same education. The foregone earnings was $5,238 per year for teachers, $3,582 for assistants, $4,348 for teacher-directors, and $3,198 for administrators. They were highest in Colorado.

- Raising teacher wages to at least $10.00 per hour or to the forecast wage of the teacher, whichever is higher, would require, on average, an increase of about $7500 per year in teacher salaries and $700 per year per child.

- The mean center annual staff turnover rate was 36%, but 13% of centers reported no staff turnover in the past year. Turnover rates were higher for all occupations in North Carolina and Colorado than in Connecticut and California.

Staff Characteristics

- On average, 22% of center staff were part-time.

- On average, 28% of center teaching staff were assistants; however, the percentage varied widely. North Carolina centers had a lower percent of assistants to teachers than centers in Colorado and Connecticut.

- Most, 97%, staff members were female; they averaged 34 years old and 53% were married. 28% of staff members with children at home used child care at the center where they worked for an average of 32 hours per week. Mean household income was $26,835 and only 11% of staff members reported income from another job. Staff reported an average of eight years of work experience outside ECE.

- Most staff reported that they chose to work in ECE because it was a desirable job (65%) or that it was an important one (27%). However, only 24% of respondents reported belonging to a professional organization. One-third of the staff reported that they were likely to leave within the next year, most of them to improve their employment position.

Regional and Labor Market Differences

- Centers seem to draw workers from reasonably well functioning labor markets. Real wages were similar across regions with few exceptions. Most of the differences in mean forecasted wages is explained by differences in the four labor markets. The absence of any growth in real wages since 1988 mirrored labor market behavior in general. Pay raises between 1992 and 1993 reflected labor market conditions in the four states: the higher raises were in Colorado which was experiencing a tightening of the labor market; absence of pay raises or raises less than the inflation rate were more common in California and Connecticut where unemployment rates were substantial. Turnover rates were highest in Colorado and lowest in Connecticut. Lay-offs occurred mainly in California and Connecticut.

- Colorado staff provided the highest foregone earnings, particularly for higher-skilled occupations in for-profit centers.

Sector Differences

- Compared to nonprofit centers, for-profit centers paid significantly lower wages (about $1 per hour lower). They provided fewer retirement and health-related benefits, but a larger percent gave child care discounts to staff.

- For-profit centers seemed to be more responsive to labor market conditions. A higher percent of for-profit centers gave some wage increase between 1992 and 1993, and were more likely to use higher wages to recruit new staff.

- On average, for-profit centers used less part-time staff, and higher ratios of teachers to assistants, particularly in North Carolina.

- On average, forecast wages for staff were higher for all job classifications for nonprofit centers than for-profit centers. Teachers and assistants in for-profit centers, as compared to nonprofit centers, had higher foregone earnings, because their lower actual pay more than compensated for their lower forecast wages.

- For-profit centers had higher turnover than nonprofit centers in all occupations except in California where turnover rates for teachers were higher for nonprofit than for-profit centers.

- For-profit centers hired younger staff, particularly in Colorado and North Carolina, and a higher percent were single.

- A higher percentage of staff in for-profit centers received reduced child care fees (53% of those with children in Colorado and North Carolina). A smaller percent of staff belonged to professional organizations and a higher percent reported they were likely to leave their current job in the next year.

Effects of Program Scope

- Wages were higher for assistants in centers with a higher percent of subsidized children, and these centers were more likely to have raised wages by at least 3%. Teachers and assistants tended to work more hours per week in these centers. These centers provided more retirement- and health-related benefits for full-time teaching staff, and were less likely to offer staff discounts for child care. Forecast wages and foregone earnings were lower. Staff mean household income was lower, staff were less likely to be members of professional organizations, and less likely to be thinking about quitting their jobs in the next year.

- Wages were lower for teachers and higher for administrators for centers with a higher percent of infants/toddlers, and they were lower in centers with school-aged care. This suggests possible substitution of administrative expertise for staff skills as a way to contain costs. Teachers and assistants tended to work more hours per week in centers with a larger percent of infants/toddlers. Forecast wages were lower in centers with a larger percent of infants/toddlers, and with a school-aged program. Centers with a larger percent of infants/toddlers tended to hire younger staff and the staff were also less likely to belong to professional organizations.

Center Use of the Low-Wage Labor Force

- These data indicate that centers do hire workers from the low-wage labor force. This is a female-dominated field; a third of the staff were 24 years old or less and 35% were single; they tend to come from low-income households, and a large percent appear to be secondary earners in the household. Centers attract mothers in need of child care who use center child care services, presumably at a discount. They hire part-time workers, and in Chapter 7, it will be revealed that more than a quarter of the staff have at most a high school education. Finally, a relatively small percent of staff belong to a professional organization and almost one quarter of the Staff Questionnaire respondents reported they expected to leave their jobs within the year to improve their labor market prospects.

- The practice of hiring from the low-wage labor force is widespread throughout the industry. Nevertheless, there are state, sector, and scope differences. These practices are more common in Colorado and North Carolina than in Connecticut and California, in for-profit than in nonprofit centers, and for staff in infant/toddler rooms than in preschool rooms.

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Table 5.1

Hourly Wages from Director Interview and Staff Questionnaire

		MEANS BY STATE AND SECTOR									ANOVAS				ANCOVAS			
		CA		CO		CT		NC		TOTAL		F-tests			Standardized Regression Coefficients			
		NP	P	NP	P	NP	P	NP	P		R - square	State	Sector	State x Sector	R-square	%Subsidized	%Infant	SA Care
WAGES FROM DIRECTOR INTERVIEW:																		
Teaching Staff	N	51	49	50	50	48	52	50	50	400	0.39	69.57*** CA,CT>CO,NC	35.05*** NP>P	2.71*	0.41	0.07	-0.12**	-0.13**
	MEAN	8.32	7.80	6.40	5.50	8.96	7.21	5.86	5.14	6.89								
	STD	2.36	1.61	1.35	0.83	2.76	1.15	1.27	0.70	2.08								
Teachers	N	50	49	47	50	47	50	50	49	392	0.42	75.88*** CA,CT>CO,NC	43.11*** NP>P	2.29	0.46	0.16***	-0.06	-0.12**
	MEAN	9.24	7.94	6.37	5.76	9.63	7.67	6.11	5.09	7.22								
	STD	2.89	1.67	1.30	1.20	2.95	1.36	1.45	0.62	2.39								
Assistant Teachers	N	41	35	45	47	41	48	39	29	325	0.32	42.07*** CT>CA>CO,NC	20.35*** NP>P	1.11	0.33	0.09	-0.08	-0.11*
	MEAN	6.26	5.96	5.28	4.72	7.10	6.16	5.26	4.72	5.70								
	STD	1.41	1.20	1.22	0.50	1.79	1.04	0.86	0.57	1.38								
Teacher-Directors	N	21	20	34	28	17	15	19	20	174	0.33	21.70*** CA,CT>CO,NC CO>NC	10.90** NP>P	1.56	0.37	0.05	-0.08	-0.24**
	MEAN	11.44	10.09	8.88	6.81	12.99	9.90	6.46	6.46	8.94								
	STD	3.63	4.19	3.00	0.96	5.88	2.66	1.71	1.34	3.78								
Administration & Specialists	N	37	36	35	47	37	40	46	41	319	0.21	23.61*** CA,CT>CO,NC	6.66* NP>P	1.36	0.21	0.01	0.04	0.04
	MEAN	14.00	14.05	9.87	9.01	15.23	12.28	10.13	8.26	11.45								
	STD	4.59	5.89	4.60	3.81	6.42	5.66	4.00	3.43	5.38								
WAGES FROM STAFF QUESTIONNAIRE:																		
Teaching Staff	N	199	166	179	180	185	177	186	138	1410	0.21	105.26*** CA,CT>CO>NC	50.90*** NP>P	5.14**	0.23	0.05*	-0.11***	-0.09***
	MEAN	8.02	7.71	6.33	5.63	8.85	7.22	5.98	5.07	6.92								
	STD	3.22	2.48	2.12	1.35	3.45	1.47	2.00	0.73	2.61								
Teachers	N	118	112	106	101	93	101	98	97	826	0.25	72.31*** CA,CT>CO>NC	50.96*** NP>P	1.47	0.26	0.11**	-0.08*	-0.08*
	MEAN	9.15	8.29	6.93	5.83	9.49	7.63	6.40	5.19	7.40								
	STD	3.59	2.62	2.40	1.34	3.85	1.34	2.35	0.78	2.89								
Assistant Teachers	N	81	54	73	79	92	76	88	41	584	0.27	56.12*** CT>CA>CO,NC	14.86*** NP>P	7.52***	0.29	-0.02	-0.12**	-0.15***
	MEAN	6.39	6.5	5.45	5.39	8.21	6.67	5.52	4.77	6.23								
	STD	1.49	1.63	1.18	1.33	2.87	1.47	1.39	0.51	1.97								

***p<.001
**p<.01
*p<.05

%Subsidized=% of enrollment that is subsidized
% Infant=% of enrollment that is infant-toddler
SA Care=Care of School-aged children

Table 5.2

Comparison of Means of Nominal and Real Wages for All Teaching Staff by State and within State by Sector

	CA		CO		CT		NC	
	NP	P	NP	P	NP	P	NP	P
Actual Hourly Wage	$8.32	$7.80	$6.40	$5.50	$8.96	$7.21	$5.86	$5.14
Forecasted Hourly Wage	$10.74	$10.79	$9.43	$9.14	$10.49	$9.58	$8.18	$7.47
Cost of Living	124.6		100.0		134.8*		98.9	
Real Hourly Wage	$6.68	$6.26	$6.40	$5.50	$6.64	$5.35	$5.93	$5.28
Wage Index	118.6		100		106.3		93.8	
Actual Hourly Wage Deflated by Wage Index	$7.02	$6.58	$6.40	$5.50	$8.43	$6.78	$6.25	$5.48
Forecasted Hourly Wage Deflated by Wage Index	$9.06	$9.10	$9.43	$9.14	$9.87	$9.01	$8.72	$7.96
Teacher Foregone Earning Deflated by Wage Index	$3,694	$4,736	$6,879	$7,671	$3,347	$4,472	$4,316	$4,459

* Deflator for Boston, Massachusetts. There is no cost-of-living deflator for Connecticut.

Table 5.3
Wage Increases

		MEANS BY STATE AND SECTOR									ANOVAS			ANCOVAS		
		CA		CO		CT		NC		TOTAL	Chi Square			Logistic Regression Coefficients or Chi Square		
		NP	P	NP	P	NP	P	NP	P		State	Sector	State x Sector	%Subsidized	%Infant	SA Care
RAISE IN LAST YEAR: % OF CENTERS WITH																
	N	51	49	50	50	49	52	50	50	401						
No Raise	PROP	0.35	0.14	0.22	0.10	0.35	0.23	0.14	0.18	0.21	7.07	5.23* NP>P	4.36	-1.26	-0.26	-0.18
Up to or = 3%	PROP	0.24	0.20	0.20	0.22	0.33	0.33	0.38	0.46	0.29	13.78** CA,CO<NC	0.09	0.71	.83*	-0.17	-0.17
Over 3% but <= 6%	PROP	0.33	0.39	0.32	0.46	0.31	0.35	0.36	0.30	0.35	1.1	0.77	2.13	0.07	0.35	0.29
More Than 6%	PROP	0.06	0.16	0.20	0.22	0.02	0.10	0.12	0.06	0.12	12.13** CO>Others	1.79	5.02	1.65*	-0.33	0.11
PERCENT OF CENTERS WITH																
Higher Wage to Recent Hires	N	49	46	48	50	48	51	50	50	392	3.17	5.92*	1.29			
	PROP	0.16	0.22	0.08	0.24	0.17	0.27	0.14	0.16	0.18						

See notes for table 5.1

Table 5.4

Hours Worked per Week by Occupation, Percent Part-time Staff, and Teacher/Assistant Ratio

		MEANS BY STATE AND SECTOR									ANOVAS				ANCOVAS			
		CA		CO		CT		NC		TOTAL		F-tests			Standardized Regression Coefficients			
		NP	P	NP	P	NP	P	NP	P		R - square	State	Sector	State x Sector	R-square	%Subsidized	%Infant	SA Care
DATA FROM DIRECTOR INTERVIEW:																		
Hours Worked per Week by Teachers	N	50	49	47	50	47	50	50	49	392	0.04	1.94	1.05	3.52*	0.11	0.18***	0.15**	-0.07
	MEAN	34.36	35.99	34.15	36.77	35.36	34.94	37.53	35.83	35.63								
	STD	6.82	4.54	5.63	4.50	4.42	6.64	4.08	3.55	5.22								
Hours Worked per Week by Assistant Teachers	N	41	35	45	47	41	48	39	29	325	0.03	0.67	1.47	1.86	0.12	0.21***	0.18**	-0.11
	MEAN	27.20	28.95	27.28	27.91	28.62	24.21	30.15	26.84	27.56								
	STD	8.89	10.44	8.90	7.58	15.98	7.72	8.26	8.72	9.89								
Hours Worked per Week by Teacher-Directors	N	21	20	34	28	18	15	19	20	175	0.01	0.07	0.16	0.67	0.05	0.16	-0.13	0.03
	MEAN	39.76	40.06	39.01	40.38	40.72	38.03	40.40	39.73	39.76								
	STD	7.48	6.10	6.96	8.36	5.84	8.67	5.91	2.75	6.70								
Percent Staff Working < 20 hrs. per Week	N	28	19	35	35	33	39	24	24	237	0.07	2.05	4.98* NP>P	2.09	0.1	0.05	-0.21**	0.01
	MEAN	0.3	0.20	0.23	0.17	0.22	0.25	0.22	0.16	0.22								
	STD	0.20	0.13	0.15	0.11	0.14	0.16	0.15	0.09	0.15								
Teacher/Assistant Ratio	N	42	32	44	45	39	43	36	25	306	0.11	2.46	26.01*** P>NP	4.11**	0.18	-0.14*	-0.06	-0.01
	MEAN	2.71	5.26	2.76	3.25	1.95	4.62	1.93	8.50	3.62								
	STD	3.96	4.81	3.26	3.66	2.45	8.90	1.49	8.98	5.43								
DATA FROM STAFF QUESTIONNAIRE:																		
Hours Worked by Teachers	N	117	110	103	100	90	99	100	95	814	0.04	8.50*** CO,NC> CA,CT	1.69	0.71	0.04	0.02	0.04	-0.05
	MEAN	34.21	35.68	37.61	38.24	35.43	36.61	38.28	37.75	36.67								
	STD	9.52	8.89	5.88	6.75	7.52	6.81	6.17	6.93	7.58								
Hours Worked by Assistant Teachers	N	81	55	74	78	90	75	89	39	581	0.05	8.43*** CA<Others	2.62	2.12	0.07	-0.04	0.07	-0.08
	MEAN	29.98	31.00	33.32	35.56	33.49	31.77	34.30	37.90	33.22								
	STD	10.71	9.83	9.86	8.02	8.32	9.81	8.86	7.71	9.43								
Hours Worked by All Responding Staff	N	200	165	178	178	182	175	191	134	1403	0.03	14.4*** CO,NC> CA,CT	5.45* P>NP	0.61	0.04	-0.02	0.04	-0.06
	MEAN	32.56	34.12	35.86	37.07	34.55	34.58	36.37	37.79	35.26								
	STD	10.19	9.45	8.05	7.44	8.01	8.57	7.80	7.13	8.57								
Unpaid Hours Worked Each Week	N	173	136	166	151	120	132	149	109	1136	0.01	2.68* CO>CA,NC	0.10	1.01	0.02	0.002	-0.07*	0.04
	MEAN	3.63	3.01	4.29	3.85	3.46	3.77	2.89	3.31	3.55								
	STD	4.47	4.29	4.78	4.60	3.31	4.30	2.90	5.71	4.36								

See notes for Table 5.1

Table 5.5

Teacher Benefits and Working Conditions, and Proportion of Centers with Collective Bargaining

		MEANS BY STATE AND SECTOR									ANOVAS				ANCOVAS			
		CA		CO		CT		NC		TOTAL	F-tests				Standardized Regression Coefficients			
		NP	P	NP	P	NP	P	NP	P		R-square	State	Sector	State x Sector	R-square	%Subsidized	%Infant	SA Care
Number of Retirement and Health Related Benefits (max = 8)	N	51	49	50	50	49	52	49	50	400								
	MEAN	2.96	1.92	3.04	3.22	3.86	2.15	3.02	2.24	2.80	0.09	2.70* CO,CT>CA	18.3*** NP>P	4.00** CO:P>NP CA,CT:NP>P	0.07	0.19***	0.07	0.02
	STD	2.24	1.69	1.86	1.84	1.84	2.08	1.97	2.04	2.03								
Number of Working Conditions (Max = 12)	MEAN	8.14	7.96	8.72	9.06	7.94	7.48	7.94	8.22	8.18	0.05	5.71*** CO>Others	0	0.83	0.06	-0.07	-0.02	0.07
	STD	2.43	2.25	1.67	1.77	2.40	1.94	1.94	2.27	2.13								
Proportion of Centers with Paid Maternity Leave	PROP	0.16	0.10	0.18	0.10	0.20	0.10	0.16	0.22	0.15		(1)				(1)		
Proportion of Centers with At Least Partially Paid Health Insurance	PROP	0.67	0.55	0.68	0.70	0.86	0.50	0.66	0.48	0.64	Chi Square	5.05	11.14*** NP>P	8.5* CO: NP<P CT: NP>P	Chi Square	-1.65***	-0.68	0.02
Proportion of Centers with Reduced Child Care Fees for Staff	PROP	0.55	0.88	0.86	0.96	0.61	0.63	0.45	0.94	0.74	Chi Square	19.64*** CO>Others CT>NC	24.51*** P>NP	15.54***	Chi Square	2.12***	-0.4	1.03***
Proportion of Centers with Collective Bargaining Agreements	N	50	47	50	50	49	50	50	50	396								
	PROP	0.18	0.00	0.02	0.00	0.16	0.00	0.00	0.00	0.05		(1)				(1)		

1: The sample size was too small to carry out ANOVA and ANCOVA analysis.

Table 5.6

Assistant Teacher Benefits and Working Conditions

		MEANS BY STATE AND SECTOR									ANOVAS				ANCOVAS			
		CA		CO		CT		NC		TOTAL	F-tests				Standardized or Logistic Regression Coefficients			
		NP	P	NP	P	NP	P	NP	P		R-square	State	Sector	State x Sector	R-square	%Subsidized	%Infant	SA Care
Number of Retirement and Health Related Benefits (Max = 8)	N	51	49	50	50	49	52	49	50	400								
	MEAN	1.94	1.27	2.56	2.90	3.10	1.92	2.00	1.84	2.19	0.07	6.50*** CO,CT> CA,NC	4.20* NP>P	2.58	0.13	0.24***	0.06	-0.05
	STD	2.22	1.41	1.93	2.00	2.27	2.10	2.05	2.21	2.10								
Number of Working Conditions (Max = 12)	MEAN	5.94	6.18	7.80	8.28	6.61	6.56	5.65	5.60	6.58	0.06	8.57*** CO>Others	0.18	0.13	0.07	0.08	0.02	0.0004
	STD	4.10	3.80	2.96	2.86	3.59	3.01	3.82	4.25	3.67								
Proportion of Centers with Paid Maternity Leave	PROP	0.12	0.06	0.16	0.06	0.12	0.10	0.12	0.22	0.12		(1)				(1)		
Proportion of Centers with At Least Partially Paid Health Insurance	PROP	0.41	0.39	0.60	0.62	0.65	0.42	0.44	0.36	0.49	Chi Square	13.05** CO,CT> CA,NC	2.49	3.56	Chi Square	-1.70***	-0.8	0.19
Proportion of Centers with Reduced Child Care Fees for Staff	PROP	0.33	0.67	0.78	0.90	0.47	0.62	0.27	0.68	0.59	Chi Square	30.16*** CO>Others	25.26*** P>NP	4.39	Chi Square	0.84*	0.01	-0.42

1 The sample size was too small to carry out ANOVA and ANCOVA analysis.

Table 5.7

Part-time Employment Benefits and Working Conditions

		MEANS BY STATE AND SECTOR									ANOVAS				ANCOVAS			
		CA		CO		CT		NC		TOTAL		F-tests			Standardized or Logistic Regression Coefficients			
		NP	P	NP	P	NP	P	NP	P		R-square	State	Sector	State x Sector	R-square	%Subsidized	%Infant	SA Care
	N	51	49	50	50	49	52	49	50	400								
Number of Retirement and Health Related Benefits (Max = 8)	MEAN	0.88	0.96	1.70	0.98	0.98	0.69	0.80	0.22	0.90	0.07	5.63*** CO>Others CA>NC	6.83** NP>P	1.49	0.09	0.1	0.14*	0.07
	STD	1.34	1.19	2.16	1.45	1.59	1.08	1.63	0.58	1.48								
Number of Working Conditions (Max = 12)	MEAN	4.43	5.73	6.60	6.30	3.88	4.33	3.67	2.16	4.64	0.13	16.3*** CO>Others CA,CT>NC	0.00	2.59	0.15	-0.08	-0.005	0.14**
	STD	4.11	3.62*	3.43	3.63	3.96	3.37	4.03	3.39	3.93								
Proportion of Centers with Paid Maternity Leave	PROP	0.08	0.02	0.12	0.02	0.04	0.02	0.08	0.00	0.05		(1)				(1)		
Proportion of Centers with At Least Partially Paid Health Insurance	PROP	0.12	0.16	0.28	0.10	0.20	0.08	0.12	0.02	0.13	Chi Square	4.97	6.70** NP>P	6.01	Chi Square	-0.69	-1.37*	-0.34
Proportion of Centers with Reduced Child Care Fees for Staff	PROP	0.29	0.67	0.66	0.78	0.37	0.37	0.20	0.26	0.45	Chi Square	47.08*** CO>Others CA,CT>NC	7.93** P>NP	7.84*	Chi Square	1.70***	0.22	-1.13***

1: The sample size was too small to carry out ANOVA and ANCOVA analysis.
See notes for table 5.1

Table 5.8

Staff Forecast Wage and Foregone Earnings

		MEANS BY STATE AND SECTOR									ANOVAS				ANCOVAS			
		CA		CO		CT		NC		TOTAL					Standardized Regression Coefficients			
		NP	P	NP	P	NP	P	NP	P		R - square	State	Sector	State x Sector	R-square	%Subsidized	%Infant	SA Care
HOURLY MARKET FORECAST WAGE:																		
Teachers	N	270	384	307	348	187	238	311	444	2489	0.25	236.16***	85.74***	1.76	0.26	-0.04*	-0.1***	-0.07***
	MEAN	11.57	10.88	10.37	9.63	11.46	10.13	8.42	7.42	9.76		CA>CT>CO>N	NP>P					
	STD	3.39	2.82	2.72	2.30	2.70	2.36	1.83	1.59	2.84								
Assistant Teachers	N	262	98	224	243	203	233	248	110	1621	0.1	49.79***	8.47**	0.78	0.12	-0.09***	-0.15***	-0.07*
	MEAN	9.05	8.97	7.94	7.41	8.47	8.22	7.29	6.86	8.04		CA>CT>CO>N	NP>P					
	STD	1.97	2.57	2.54	1.86	2.31	2.20	1.64	1.52	2.20								
Teacher-Directors	N	22	26	43	32	22	16	22	23	206	0.32	23.28***	21.59***	1.01	0.35	-0.08	-0.11	-0.16*
	MEAN	13.86	11.19	11.47	10.46	13.99	12.51	9.85	7.89	11.31		CA,CT>CO>NC	NP>P					
	STD	3.31	3.09	2.98	2.34	3.01	2.38	1.79	1.08	3.16								
Administration	N	53	68	82	79	67	74	72	72	567	0.18	36.64***	11.44***	1.5	0.18	0.03	0.02	-0.01
	MEAN	15.87	14.00	12.92	11.72	13.70	13.73	10.98	9.70	12.70		CA>CT>CO>N	NP>P					
	STD	4.49	4.00	5.54	3.32	3.02	3.37	3.14	2.21	4.14								
ANNUAL EARNINGS FOREGONE (per Full-time Staff):																		
Teachers	N	270	384	306	348	184	238	311	443	2484	0.07	59.11***	17.52***	1.81	0.08	-0.07***	-0.003	0.03
	MEAN	4381	5617	6879	7671	3558	4754	4048	4183	5238		CO>CA>CT,NC	P>NP					
	STD	4738	5899	4910	4394	5606	4350	3338	4927	5016								
Assistant Teachers	N	262	98	224	243	202	233	248	110	1620	0.03	16.06***	3.88*	2.14	0.04	-0.09***	0.01	-0.01
	MEAN	3750	4904	4210	4234	2599	3155	3154	2953	3582		CO,CA>CT,NC	P>NP					
	STD	3634	4969	4028	3449	4320	3310	3134	2394	3718								
Teacher-Directors	N	22	26	43	32	21	16	22	23	205	0.1	2.96*	0.85	3.47*	0.14	-0.15*	0.04	0.17*
	MEAN	4278	3352	4697	7318	-629	4715	6441	3045	4348		CO>CT		CO,CT:P>NP				
	STD	6127	9294	6354	5126	10350	7019	4880	3488	7029				CA,NC:P<NP				
Administration	N	51	62	80	71	66	59	72	67	528	0.03	3.86**	1.72	0.79	0.04	-0.07	-0.05	-0.07
	MEAN	5154	4403	3443	5266	-7.78	2649	2248	2771	3198		CA,CO>CT						
	STD	8138	14109	8598	6818	8557	9785	6269	10012	9305								

See notes for table 5.1

Table 5.9

Forecast Wages for Teachers when Forecast Wage is at Least $10.00 / hr.; (1) and Annual Cost per Teacher of Achieving a "Worthy Wage"

		MEANS BY STATE AND SECTOR								
		CA		CO		CT		NC		TOTAL
		NP	P	NP	P	NP	P	NP	P	
Forecast Wage for Teachers	N	270	384	307	348	187	238	311	444	2489
	MEAN	$12.15	$11.55	$11.29	$10.77	$11.91	$11.04	$10.23	$10.09	$11.03
	STD	2.81	2.20	1.82	1.34	2.21	1.56	0.67	0.48	1.86
Forecast Wage for Teacher-Directors	N	22	26	43	32	22	16	22	23	206
	MEAN	14.08	11.93	11.96	11.15	14.13	12.65	10.64	10	11.99
	STD	2.94	2.35	2.49	1.62	2.76	2.13	1.03	0	2.49
Annual Cost of Worthy Wage for Teachers	N	270	384	306	348	184	238	311	443	2484
	MEAN	5441	6887	8597	9950	4410	6462	7351	9014	7581
	STD	4511	5307	4074	3279	5398	3575	3157	4538	4593
Annual Cost of Worthy Wage for Teacher-Directors	N	22	26	43	32	21	16	22	23	205
	MEAN	4743	4877	5659	8755	-300	5011	8019	7375	5730
	STD	5834	8924	5833	4088	10377	6798	4378	2841	6774

1: For this table, forecast wages were calculated at either the staff person's forecast wage, or $10/hr., which ever was higher.

See notes for table 5.1

Table 5.10
Center Training Policies

		MEANS BY STATE AND SECTOR									ANOVAS				ANCOVAS			
		CA		CO		CT		NC		TOTAL		F-tests			Standardized Regression Coefficients			
		NP	P	NP	P	NP	P	NP	P		R - square	State	Sector	State x Sector	R-square	%Subsidized	%Infant	SA Care
Composite Variable Training Who & Where	N	51	49	50	50	49	52	50	50	401								
	MEAN	-0.03	-0.30	-0.06	-0.01	-0.05	-0.04	0.20	-0.04	-0.04	0.02	1.50	1.70	1.00	0.03	0.02	0.05	0.00
	STD	0.78	0.78	0.85	1.02	0.83	0.69	0.87	0.85	0.84								
CENTERS WITH TRAINING:																		
Proportion of Staff with 15 hrs Inservice Training	N	30	30	26	32	37	33	37	27	252								
	MEAN	0.55	0.37	0.46	0.57	0.55	0.45	0.57	0.54	0.51	0.28	0.60	1.03	1.28	0.07	0.19**	0.03	0.04
	STD	0.41	0.4	0.36	0.37	0.42	0.4	0.42	0.42	0.4								
Proportion of Staff with 15 hrs Off-site Training	N	41	37	38	36	48	48	46	33	327								
	MEAN	0.42	0.36	0.33	0.35	0.47	0.49	0.69	0.53	0.46	0.09	8.55*** NC>CO,CA,CT CT>CO	1.29	1.13	0.10	0.15*	0.00	-0.03
	STD	0.34	0.37	0.28	0.34	0.35	0.36	0.36	0.44	0.37								
Proportion of All Centers Offering Tuition Reimbursement	PROP	0.49	0.59	0.78	0.96	0.45	0.31	0.54	0.86	0.63	0.09	1.90*** CO,NC>CT,CA	2.00	2.00	0.10	-0.09	-0.04	0.01
Proportion of All Centers Offering Release Time for Training	PROP	0.73	0.80	0.80	0.86	0.86	0.79	0.92	0.74	0.81	0.01	0.30	0.00	0.70	0.03	0.09	0.05	1.20
FOR CENTERS WITH TRAINING COSTS:																		
Annual Training Costs per FTE Staff	N																	
	MEAN	106.9	130.1	131.8	140.6	138.7	123.7	136.8	71.67	122.5	0.02	0.70	0.50	1.20	0.02	-0.02	-0.01	-0.05
	STD	148.7	193.2	139.2	284.5	224.1	152.3	109.5	80.76	176.3								

See notes for table 5.1

Table 5.11

Annual Turnover Rates

		Means by State and Auspice									ANOVAS				ANCOVAS			
		CA		CO		CT		NC		TOTAL	F-tests				Standardized Regression Coefficients			
		NP	P	NP	P	NP	P	NP	P		R^2	State	Profit	State x Profit	R^2	%Subsidized	%Infant	SA Care
ANNUAL CENTER STAFF TURNOVER RATE:																		
	N	51	49	49	50	49	52	50	50	400								
Percent All Staff	MEAN	26.61	29.48	35.64	66.91	21.72	31.46	28.64	50.76	36.41	0.11	8.52*** CO, NC>CA, CT CO > NC	17.53*** P>NP	2.57	0.13	0.10*	0.08	0.07
	STD	46.16	32.31	44.52	58.82	23.11	27.65	22.87	44.48	41.51								
	N	50	48	47	48	47	50	49	49	388								
Percent Teachers	MEAN	31.10	30.54	33.45	53.80	31.31	37.02	30.57	61.47	38.68	0.04	1.65	6.12* P>NP	1.57	0.06	0.13*	0.06	0.03
	STD	88.74	33.97	62.97	43.40	37.64	36.89	31.68	79.95	56.78								
	N	39	31	44	47	34	38	38	22	293								
Percent Assistant Teachers	MEAN	27.79	39.13	46.91	121.2	22.38	49.00	23.84	76.09	52.09	0.12	5.44** CO>Others	14.16*** P>NP	1.3	0.13	0.04	0.09	0.10
	STD	48.39	60.53	64.40	174.2	30.81	84.10	28.56	115.2	96.21								
	N	35	22	25	29	31	12	42	18	214								
Percent Administrators	MEAN	12.86	9.09	16.00	17.24	6.45	16.67	19.07	36.11	15.89	0.04	1.99	1.23	0.75	0.04	0.07	0.03	0.03
	STD	32.86	25.05	37.42	44.87	24.97	38.92	39.73	58.93	38.21								
REASONS FOR LEAVING:																		
	N	37	38	50	40	46	38	45	45	339	0.04	3.24* CO,CT,NC>CA	0.29	0.7	0.06	-0.02	-0.08	0.1
Proprotion Left Voluntarily	MEAN	0.72	0.71	0.82	0.86	0.88	0.80	0.83	0.81	0.81								
	STD	0.35	0.36	0.22	0.24	0.22	0.34	0.21	0.31	0.28								
Proportion Let Go	MEAN	0.05	0.06	0.00	0.00	0.01	0.08	0.00	0.03	0.03	0.04	2.70* CO<CA,CT	3.48	1.22	0.05	-0.04	-0.05	-0.10
	STD	0.18	0.19	0.02	0.03	0.05	0.24	0.00	0.16	0.14								
Proportion Left for Other Reasons	MEAN	0.09	0.07	0.00	0.00	0.03	0.03	0.00	0.00	0.03	0.06	6.30*** CA>CO,CT,NC	0.05	0.2	0.06	0.01	-0.06	-0.08
	STD	0.25	0.23	0.00	0.02	0.09	0.17	0.00	0.00	0.13								
Proportion Dismissed	MEAN	0.14	0.16	0.18	0.13	0.09	0.09	0.17	0.16	0.14	0.02	1.91	0.09	0.35	0.05	0.04	0.17**	-0.02
	STD	0.22	0.27	0.22	0.23	0.20	0.23	0.21	0.27	0.23								
	N	35	32	39	49	36	45	46	47	329	0.14	10.46*** CO>CA,CT,NC NC>CA,CT	17.76*** P>NP	0.4	0.16	-0.01	0.1	0.14*
Total Number that Left Voluntarily	MEAN	2.00	3.19	4.36	6.80	1.64	3.31	2.89	5.23	3.84								
	STD	1.55	2.51	4.48	6.41	1.31	4.18	3.06	4.76	4.35								

See notes for table 5.1

Table 5.12

Relation between Center Staff Turnover Rates, Wages and Center Quality

		Centers with No Turnover in Last Year	Centers with Some Turnover in Last Year	t-Test
HOURLY WAGE				
Teachers	N	46	346	3.37**
	Mean	8.55	7.04	
	Std	2.92	2.26	
Assistant Teachers	N	39	286	3.78***
	Mean	6.69	5.57	
	Std	1.80	1.26	
Teacher-Directors	N	22	152	2.42*
	Mean	11.63	8.55	
	Std	5.85	3.23	
MEAN CENTER QUALITY INDEX	N	51	347	1.85
	Mean	4.22	3.98	
	Std	0.88	0.85	
		Centers with <= 10% Turnover Rate	Centers with > 10% Turnover Rate	t-Test
MEAN CENTER QUALITY INDEX	N	92	306	2.72**
	Mean	4.23	3.95	
	Std	0.90	0.84	

See notes for Table 5.1

Table 5.13

Staff Characteristics: Marital Status, Age and Sex

		MEANS BY STATE AND SECTOR									ANOVAS				ANCOVAS			
		CA		CO		CT		NC		TOTAL	F-tests				Standard Regression Coefficients			
		NP	P	NP	P	NP	P	NP	P		R-square	State	Sector	State x Sector	R-square	%Subsidized	%Infant	SA Care
MARITAL STATUS:																		
	N	204	166	179	176	182	176	196	138	1417								
Proportion of Staff Single Living Alone	PROP	0.13	0.21	0.16	0.2	0.13	0.13	0.16	0.18	0.16	Chi Square	25.03*	13.29** P>NP	13.35	Chi Square	21.87***	11.17*	5.62
Proportion of Staff Single Living with Parents	PROP	0.2	0.17	0.09	0.18	0.17	0.31	0.21	0.21	0.19		NA				NA		
Proportion of Staff Married	PROP	0.51	0.5	0.6	0.54	0.57	0.48	0.5	0.52	0.53		NA				NA		
Proportion of Staff Divorced	PROP	0.11	0.08	0.14	0.07	0.09	0.05	0.07	0.07	0.09		NA				NA		
Proportion of Staff Widow or Widower	PROP	0.04	0.03	0.01	0.01	0.04	0.03	0.06	0.02	0.03		NA				NA		
PROPORTION OF STAFF																		
	N	204	170	179	180	182	175	195	138	1423		NA				NA		
Female	PROP	0.97	0.98	0.93	0.99	0.97	0.98	0.99	0.97	0.97								
	N	201	167	177	177	183	178	194	138	1415	0.03	2.95* CO<CA,CT	34.4*** NP>P	0.99	0.04	0.03	-0.10***	0.03
Age	MEAN	35.8	33.6	34.4	30.5	37.3	32.0	35.1	31.4	33.9								
	STD	11.9	11.7	10.8	10.5	12.8	12.4	13.2	11.8	12.1								

See notes for table 5.1

Table 5.14

Staff Characteristics: Number of Children, Use of Center Child Care, Hours Worked on Other Jobs and Income

		MEANS BY STATE AND SECTOR									ANOVAS				ANCOVAS			
												F-tests			Standardized Regression Coefficients			
		CA		CO		CT		NC		TOTAL				State x Sector				
		NP	P	NP	P	NP	P	NP	P		R-square	State	Sector		R-square	%Subsidi	%Infant	SA Care
CHILDREN:																		
Number of Children Living with Respondent	N	127	74	103	73	99	76	112	72	736	0.006	1.22	0.18	0.10	0.012	0.07	-0.04	-0.006
	MEAN	1.9	1.9	2.1	2.0	1.8	1.8	1.9	1.9	1.9								
	STD	1.1	1.1	1.1	1.1	0.9	0.9	1.0	1.4	1.1								
Proportion of Staff with Children Receiving Care at Center	N	125	74	100	72	97	73	107	72	720	0.093	5.61***	50.50***	2.58	0.117	-0.11**	0.07	0.12**
	PROP	0.17	0.36	0.26	0.53	0.16	0.27	0.17	0.53	0.28		CO,NC>CT	P>NP					
	STD	0.38	0.48	0.44	0.50	0.37	0.45	0.38	0.50	0.45		CO>CA						
Hours per Week Child Care Provided	N	21	26	26	37	17	20	18	36	201	0.017	0.45	0.10	0.67	0.054	-0.04	0.16*	-0.06
	MEAN	32.2	29.2	32.1	31.3	26.7	33.4	33.7	33.8	31.7								
	STD	13.3	13.8	17.4	18.0	14.9	20.7	14.1	15.2	16.1								
FOR STAFF WITH OTHER JOBS:																		
Hours Worked Elsewhere by Teachers	N	17	16	14	7	13	13	14	10	104	0.08	1.02	1.21	1.50	0.09	0.13	0.05	0.0008
	MEAN	12.4	14.9	15.4	10.4	13.2	16.7	13.8	21.3	14.7								
	STD	8.7	11.1	14.8	5.9	7.2	8.6	7.3	8.0	9.7								
Hours Worked Elsewhere by Assistant Teachers	N	13	5	10	6	13	15	13	4	79	0.08	1.94	0.00	0.25	0.14	0.17	-0.14	-0.19
	MEAN	14.5	11.2	18.4	19.0	14.7	15.6	19.0	21.3	16.4								
	STD	7.9	4.6	11.1	6.2	7.3	9.4	9.8	14.6	9.0								
Hours Worked Elsewhere by all Responding Staff	N	30	21	24	13	26	28	28	14	184	0.05	2.16	1.02	0.99	0.07	0.13	-0.04	-0.06
	MEAN	13.3	14.1	16.7	14.4	13.9	16.1	16.1	21.3	15.5								
	STD	8.3	9.9	13.2	7.3	7.1	8.9	8.7	9.6	9.4								
INCOME:																		
Income from Other Job	N	27	16	26	12	24	22	19	12	158	0.05	0.34	0.01	2.40	0.06	-0.03	-0.01	-0.10
	MEAN	6,407	5,600	6,115	3,338	5,493	4,905	2,962	7,430	5,359								
	STD	6,451	5,792	6,380	2,890	3,927	4,938	2,910	8,926	5,558								
Income from Other Sources	N	7	12	19	8	8	6	9	8	77	0.13	0.75	0.04	2.34	0.17	0.05	0.01	-0.20
	MEAN	4,691	11,644	5,531	6,553	7,620	7,556	7,904	1,431	6,740								
	STD	2,850	9,068	5,052	9,193	8,127	6,309	12,139	1,847	7,662								
Total Household Income	N	186	158	172	168	169	161	173	126	1,313	0.07	31.80***	0.67	0.06	0.09	-0.13***	-0.05	-0.02
	MEAN	26,075	27,089	22,674	23,333	33,757	35,000	23,150	23,333	26,835		CT>CA>						
	STD	17,240	17,954	16,449	17,118	17,293	18,269	15,403	15,937	17,567		CO,NC						
Years Experience Outside ECE	N	169	142	160	164	158	143	157	106	1,199	0.01	1.87	2.14	1.88	0.02	0.05	-0.04	0.01
	MEAN	7.05	8.08	8.27	7.31	9.27	7.74	9.27	8.30	8.15								
	STD	5.66	7.26	7.03	6.49	8.20	5.95	8.43	7.88	7.16								

See notes for table 5.1

Table 5.15

Reasons Staff Chose to Work in ECE, Participation in Professional Organizations, and Intentions to Remain in Their Jobs

		MEANS BY STATE AND SECTOR									ANOVAS			ANCOVAS		
		CA		CO		CT		NC		TOTAL	Chi Square			Standardized or Logistic Regression Coefficients (Chi Square)		
		NP	P	NP	P	NP	P	NP	P		State	Sector	State x Sector	%Subsidized	%Infant	SA Care
Why Chose ECE?																
PROPORTION OF STAFF ANSWERING:	N	201	167	176	175	178	173	189	135	1394	15.35	5.00	10.66	10.81*	4.43	3.92
Highest Paying Job	PROP	0.03	0.02	0.03	0.02	0.02	0.02	0.02	0.04	0.02						
Job Environment	PROP	0.65	0.67	0.55	0.67	0.66	0.74	0.62	0.61	0.65						
Low Cost of Working	PROP	0.01	0.01	0.03	0.04	0.02	0.01	0.03	0.04	0.02						
Flexible Hours	PROP	0.03	0.02	0.04	0.03	0.03	0.05	0.04	0.03	0.04						
Important Job	PROP	0.27	0.28	0.35	0.24	0.26	0.18	0.29	0.28	0.27						
	N	202	169	177	178	181	176	194	137	1414	22.02***	39.47***	7.44	-0.58**	-0.98**	-0.28
Belong to ECE Organization	PROP	0.30	0.20	0.21	0.13	0.40	0.22	0.30	0.08	0.24	CA,CT>CO,NC	NP>P				
STAFF INTENTIONS TO REMAIN IN THEIR JOBS:	N	202	168	179	175	185	175	194	135	1,413	10.16*	12.90***	0.14	-0.37	-0.15	0.06
Proportion Likely to Quit in Next 12 Months	PROP	0.31	0.34	0.35	0.42	0.19	0.37	0.31	0.39	0.33	NC,CO>CT	P>NP				
REASONS LIKELY TO QUIT:	N	61	57	62	74	34	63	58	51	460	13.87	2.18	10.57	-11.79**	-6.06	-0.89
Higher Wage	PROP	0.38	0.42	0.19	0.31	0.41	0.27	0.34	0.25	0.32						
Career Change	PROP	0.20	0.21	0.32	0.30	0.24	0.33	0.19	0.39	0.27						
School	PROP	0.07	0.09	0.18	0.16	0.15	0.13	0.14	0.16	0.13						
Family Reasons	PROP	0.36	0.28	0.31	0.23	0.15	0.27	0.33	0.20	0.27						

See notes for table 5.1

Table 5.16

Comparison of Full-time Staff Benefits: Cost, Quality, Outcomes vs. Staffing Study

Benefit	**Cost, Quality and Outcome Study**		**Staffing Study**
	Teachers	Assistant Teachers	Full-time Staff
Retirement	32%	24%	22%
Life Insurance	49	38	30
Paid Sick Leave	83	64	67
Paid Vacation	85	66	76
Paid Meetings/Training	72	60	83
Written Contract	38	28	78

Source: Whitebook, M., Howes, C., and D. Phillips. (1990)

Chapter 6

Classroom Process and Classroom Structure

by LESLIE PHILLIPSEN, DEBBY CRYER, & CAROLLEE HOWES

OVERVIEW

Indices of classroom process and classroom structure were examined to determine whether there were statistically significant differences related to state and sector. This chapter reports the analyses of state and sector effects on process and structural quality variables. These variables represent information at two levels: the room and the center. Room-level data, typically, represent information collected through observations or information collected from teachers and assistants in the observed rooms. Center-level data represent information collected from the center director or weighted averages for each of the two observed rooms. These weighted averages are weighted by the proportion of center FTE in the age group represented by the observed room. Since, whenever possible, an infant/toddler and a preschool room were observed in each center, the room-level data represents information by age-level of the children, that is, infant/toddler or preschool.

RESULTS

CLASSROOM PROCESS

Classroom process describes aspects of the overall quality of the services received by children. More specifically, classroom process refers to the way that children are cared for, such as the amount of warmth a caregiver shows for a child, or the emotional tone that is present in the classroom. The activities that are available for children to engage in, and the learning opportunities that are present, are also aspects of classroom process. Classroom process variables are factors of child care programs that are not easily regulated. The classroom process measures examined here include a process quality index, the Early Childhood Environment Rating Scale (ECERS; Harms & Clifford, 1980) and the Infant/Toddler Environment Rating Scale (ITERS; Harms, Cryer, & Clifford, 1990), the Caregiver Interaction Scale (Arnett, 1989), the Adult Involvement Scale (Howes & Stewart, 1987), the Peer Play Scale (Howes & Matheson, 1992), and the UCLA Early Childhood Classroom Observation Form (Stipek, Daniels, Galluzzo, & Milburn, 1992). In each case, variables were subjected to a two-way ANOVA in order to test the main and interactional effects of state and sector. The three program scope variables were then examined for their impact on the classroom process variable.

Process Quality Index

To create a single score to represent classroom process quality, a process quality index was created using principal component techniques. Principal components analyses (PCA) were performed including both the factor and the total scores from most of the measures of process quality (ECERS, ITERS, Caregiver Interaction Scale, and Adult Involvement Scale). The Peer Play Scale was not included because it was viewed as a measure of child outcomes rather than child care quality. The UCLA Early Childhood Observation Form and the Observation of Activities in Preschool measures were not included because they were not used in infant/toddler classrooms. The principal components analyses were conducted separately for the infant/toddler and preschool data. In both infant/toddler and preschool classrooms, high correlations were observed between the factor scores for each process quality measure and the total scores for each process quality measure. These high correlations indicated that process quality could be indexed by a single score. Thus, the final process index includes the total scores from the ECERS, ITERS, Caregiver Interaction Scale, and Adult Involvement Scale. Separate indices were also computed for infant/toddler and preschool classrooms. The index was scaled to a seven-point scale (similar to the ECERS and ITERS) with a range from 1(inadequate, to 3 (minimal), to 5 (good), and to 7 (excellent). Each center's process quality index is a weighted average of room-level indices, weighted by the percent of center FTE children in the given age-group.

In this section, comparisons will be made using both the process index and its components. The mean process quality index score for the sample was a 4, indicating that the average quality of care was between minimal (3) and good (5). There were significant effects for both state and sector in the index and a significant state by sector interaction (see Table 6.1). Analysis of the interaction revealed that, in the sample of all four states, profit sector only affected quality index scores in North Carolina, where nonprofit centers had higher process quality than for-profit centers. In the other three states, process quality did not vary by sector. California and Connecticut centers had higher process quality index scores than Colorado centers which in turn had higher scores than North Carolina centers. Program scope explained a significant proportion of the variance in process quality after sector, state, and their interaction were controlled. The presence of a before- and after-school program decreased process index scores.

The process quality index was examined separately for infant/toddler and preschool rooms (see Table 6.2). For infant/toddler rooms, significant state and sector differences were found. California and Connecticut had higher index scores than North Carolina, and Connecticut had high index scores than Colorado. Nonprofit centers had higher index scores than for-profit centers. For preschoolers, significant effects for state and sector and a significant interaction between state and sector was found. Analysis of the interaction between state and sector revealed that sector played a role only in North Carolina, where nonprofit centers had higher quality index scores than for-profit centers. In the other three states, process quality did not vary by sector. California and Connecticut had higher index scores than Colorado and North Carolina.

ECERS/ITERS Quality Factor Scores

The ECERS factors, Appropriate Caregiving and Developmentally Appropriate Activities, both averaged about a 4, reflecting mediocre quality of care (halfway between minimal and good). There were significant effects for state and sector and a significant interaction between state and sector for both ECERS factors (see Table 6.1). For both factors, analysis of the interaction between state and sector revealed that profit sector played a role only in North Carolina, where nonprofit centers had higher scores than for-profit centers. In the other three states, Appropriate Caregiving and Developmentally Appropriate Activities scores did not vary by sector. For the Appropriate Caregiving factor, North Carolina had lower scores than the other three states, and Colorado had lower scores than California. For the Developmentally Appropriate Activities factor, North Carolina had lower scores than the California and Connecticut. Program scope explained significant additional variance in both the ECERS factors; the higher the proportion of infants in a center and the presence of a before- and after-school program decreased both Appropriate Caregiving and Developmentally Appropriate Activities scores. The ITERS Interaction factor averaged a 4, reflecting mediocre quality of care between minimal and good. The ITERS Activities factor averaged a 3, reflecting minimal quality of care. The ITERS Health factor averaged

2.5, reflecting below-minimal quality of care. There were significant state effects and a significant interaction between state and sector for the three ITERS factors (see Table 6.1). For the Interaction factor, analysis of the interaction between state and sector revealed that sector played a role only in North Carolina, where nonprofit centers had higher scores than for-profit centers. For the other three states, Interaction scores did not differ significantly by sector. For the Activities and Health factors, analysis of the interaction between state and sector revealed that sector played a role only North Carolina and Colorado, where nonprofit centers had higher scores than for-profit centers. In California and Connecticut, Activities and Health scores did not vary by sector. Analysis of the state differences revealed that, for the Interaction factor, North Carolina had lower scores than the other three states, and Colorado had lower scores than Connecticut. For the Activities factor, North Carolina had lower scores than the other three states, and Colorado had lower scores than Connecticut. For the Health factor, North Carolina had lower scores than the other three states, and California had lower scores than Colorado and Connecticut. Also, an effect for sector was found for the Interaction factor, with nonprofit centers scoring higher than for-profit centers; however, this was entirely due to the differences in North Carolina. Finally, program scope did not explain significant additional variance in any of the three ITERS factors.

Caregiver Interaction Scale

The Caregiver Interaction Scale assesses the caregiver-child relationship with four factors: Sensitivity, Harshness, Detachment, and Permissiveness. Responses to the items are indicated from never true (1) to often true (4). The Sensitivity and Permissive factors averaged a 3. The Harshness and Detached factors averaged a 2. There were significant effects for state and sector and a significant interaction between state and sector for many of the factors (see Table 6.1).

For caregiver Sensitivity, Harshness, and Detachment, sector played a role in North Carolina only, with caregivers in nonprofit centers displaying more sensitivity and less harshness and detachment than caregivers in for-profit centers. For the other three states, Sensitivity, Harshness, and Detachment scores did not vary by sector. For Permissiveness, sector played a role in Connecticut only, with caregivers in nonprofit centers displaying more permissiveness than caregivers in for-profit centers. For the other three states, Permissiveness scores did not vary by sector. State differences were found for caregiver Sensitivity, Harshness, and Detachment. For Sensitivity, Connecticut caregivers were more sensitive than California caregivers, who in turn were more sensitive than Colorado caregivers, who were more sensitive than North Carolina caregivers. For Harshness, North Carolina caregivers were more harsh than caregivers in the other three states. For Detachment, North Carolina caregivers were more detached than Colorado caregivers, who were more detached than caregivers in both Connecticut and California. Sector differences were found for caregiver Sensitivity and Detachment. Caregivers in nonprofit centers were more sensitive and less detached than caregivers in for-profit centers, again due entirely to sector differences in North Carolina. Program scope explained additional variance for caregiver sensitivity only, with the higher the proportion of infants in a center and the presence of a before- and after-school program decreasing Sensitivity scores.

Caregiver Interaction Scores were examined separately for infant/toddlers and preschoolers (see Table 6.3). For infant/toddlers, significant state differences were found for Sensitivity and Detachment. Caregivers in California and Connecticut were more sensitive than caregivers in North Carolina, and caregivers in Connecticut were more sensitive than caregivers in Colorado. Caregivers in North Carolina were more detached than caregivers in California and Connecticut. For preschoolers, significant effects for state and sector and significant interactions between state and sector were found. Analyses of the interactions revealed that sector played a role only in North Carolina, where caregivers in nonprofit centers were more sensitive, less harsh, and less detached than caregivers in for-profit centers.

State differences for caregiver interactions in preschool classrooms were found for all four factors. For Sensitivity, Connecticut caregivers were more sensitive than caregivers in the other three states, and California caregivers were more sensitive than Colorado and North Carolina caregivers. For Harshness, North Carolina caregivers were more harsh than caregivers in the other three states. For Detachment, North Carolina caregivers were more detached than caregivers in California and Colorado, and Colorado caregivers were more detached than California caregivers. For Permissiveness, North Carolina caregivers were more permissive than caregivers in Colorado. Sector differences in preschool classrooms were found for Sensitivity and Detachment, with caregivers in nonprofit centers showing more sensitivity and less detachment than caregivers in for-profit centers, again, only in North Carolina.

Adult Involvement Scale

The Adult Involvement Scale uses time-sampled observations to measure the intensity of teacher-child involvement. The original six levels of the scale were collapsed into three levels of teacher behaviors. Percent Ignore reflects the proportion of time that teachers ignored the target children within 3 feet of them. Percent Low-Level reflects the proportion of time that teachers interacted in a low-level manner (routine or minimal caregiving) with target children within 3 feet of them. Percent Responsive reflects the proportion of time that teachers interacted in a responsive manner (answering or extending the child's social bids, or holding or hugging the child) with target children within 3 feet of them.

Teachers ignored target children an average of 28% of the time they were within 3 feet of them. Teachers interacted with target children in a low-level manner an average of 35% of the time they were within 3 feet of them. Teachers interacted with target children in a responsive manner an average of 34% of the time they were within 3 feet of them.

There were significant effects for state in all three of the adult involvement scores, and one effect for sector (see Table 6.1). For Percent Ignore, Connecticut adults spent a lower proportion of their time ignoring target children than adults in the other three states. For Percent Low-Level, Connecticut adults spent a lower proportion of their time engaging in low-level involvement with target children than adults in California, and Colorado adults spent a lower proportion of their time engaging in low-level involvement with target children than adults in California and North Carolina. For Percent Responsive, Connecticut adults spent a higher proportion of their time engaging in responsive involvement with target children than adults in California, and North Carolina adults spent a higher proportion of their time engaging in responsive involvement with target children than adults in Colorado. A sector difference was found for Percent Responsive, with adults in nonprofit centers spending a higher proportion of their time engaging in responsive involvement with target children than adults in for-profit centers. Program scope explained significant additional variance in the proportion of Low-Level and Responsive involvement. The higher the proportion of infants in a center, the lower the proportion of low-level involvement with target children and the higher the proportion of responsive involvement with target children.

Adult involvement was examined separately for infant/toddlers and preschoolers (see Table 6.4). For infant/toddlers, significant state and sector differences were found. For Percent Ignore, Connecticut adults spent a lower proportion of their time ignoring target children than adults in the other three states. For Percent Low-Level, California adults spent a lower proportion of their time engaging in low-level involvement with target children than adults in Colorado. For Percent Responsive, Connecticut adults spent a higher proportion of their time engaging in responsive involvement with target children than adults in Colorado and North Carolina, and California adults spent a higher proportion of their time engaging in responsive involvement with target children than adults in Colorado. Sector differences were found for Percent Low-Level and Percent Responsive, with adults in nonprofit centers engaging in more responsive involvement and less low-level involvement than adults in for-profit centers.

For preschoolers, significant state and sector differences were found. For Percent Ignore, Connecticut adults spent a lower proportion of their time ignoring target children than adults in California and North Carolina. For Percent Low-Level, California adults spent a lower proportion of their time engaging in low-level involvement with target children than adults in Colorado. For Percent Responsive, Connecticut adults spent a higher proportion of their time engaging in responsive involvement with target children than adults in Colorado and North Carolina. Sector differences were found for Percent Responsive, with adults in nonprofit centers engaging in more responsive involvement with target children than adults in for-profit centers.

Peer Play

Peer play was measured by time-sampled observations of the percent of time that children engaged in Unoccupied, Solitary, High Social, and Pretend Play. Observations took place during times when children were relatively free to interact with peers. Age was adjusted prior to the analyses. On the average, observed children were unoccupied 1% of the time; they were engaged in solitary play 25% of the time; they were engaged in high social play 35% of the time; and they were engaged in pretend play with peers 4% of the time. This figure for pretend play is low when compared to normative samples (Howes & Matheson, 1992).

There were significant effects for state in peer play (see Table 6.5). The highest mean level of peer play was in California followed by Connecticut, followed by North Carolina, and then Colorado. Children in Connecticut had a higher proportion of time spent in unoccupied behavior than children in the other three states. Children in North Carolina had a lower proportion of time spent in solitary behavior than children in the other three states. Children in Colorado had a lower proportion of time spent in high social play than children in the other three states. Children in California had a higher proportion of time spent in pretend play than children in the other three states. Program scope explained additional variance in high social and pretend play. A higher proportion of subsidized children in the center decreased the proportion of time that children spent in high social and pretend play.

Child-centered Emphasis

The UCLA Early Childhood Classroom Observation Form measures a program's child-centered emphasis. This measure distinguishes between didactic and child-centered preschool classrooms. Centers that are more child-centered and less didactic are considered to be developmentally appropriate for young children. There were significant effects for state and sector and significant state by sector interactions for many of the child-centered emphasis variables (see Table 6.6). For academic emphasis, child-initiated activities, and discipline, analyses of the state by sector interactions revealed that sector played a role only in North Carolina, with nonprofit centers having less academic emphasis, more child-initiated activities, and less discipline than for-profit centers. For the other three states, scores of academic emphasis, child-initiated activities, and discipline did not vary by sector. For the state by sector interaction for performance pressure, sector played a role in North Carolina and Connecticut, with nonprofit centers placing less performance pressure on children than for-profit centers. In California and Colorado, performance pressure did not vary by sector.

State differences were found for academic emphasis, discipline, evaluation, and performance pressure. Connecticut centers emphasized academics less than California and North Carolina centers. North Carolina centers used discipline, emphasized evaluation, and placed performance pressure on children more than centers in the other three states. Sector differences were found for academic emphasis, with nonprofit centers in North Carolina emphasizing academics less than for-profit centers. Program scope did not explain additional variance in any of the child-centered emphasis variables.

Types of Children's Classroom Experience

The type of experiences preschool-aged children had in the classrooms was measured using the Observations of Activities in Preschool (Palacios & Lera, 1991). Data collectors coded various aspects of children's activities during five hourly observations, including the teacher's role, the teacher-child relationship, the social organization of the child, the type of activity in which the child was involved, the content area into which the activity could be classified, and the form of expression the child used during the activity.

Cluster analyses were completed using the variables which were considered to best describe the teachers' style in organizing the classroom, including the role of the teacher, the teacher-child relationship, and the social organization of the child. Two clusters emerged from these analyses that were somewhat similar to those found in an analysis completed in Spain and related to overall classroom global quality (Palacios & Lera, 1991). One cluster consisted of 175 classrooms in which whole class activities were much more likely, whereas the other cluster consisted of 257 classrooms in which the whole group, small group, and individual activities tended to be about equally likely.

The two clusters were then compared on the summary measures of classroom process quality. The analyses indicated that the cluster which had more whole class activities (Cluster 2) tended to have somewhat lower levels of quality as indicated by the process index score, the ECERS, the Caregiver Interaction Scale, the Adult Involvement Scale, and the UCLA Early Childhood Classroom Observation Form (see Table 6.7). No state or sector differences were found in either cluster.

Relations Among Measures of Classroom Process

Correlations were computed between selected measures of classroom process (see Table 6.8). In general, the process index, the ECERS, ITERS, and the Caregiver Interaction Scale measures were highly correlated with each other. The Adult Involvement and Peer Play Scales were not highly related with each other nor with the other measures of process quality.

CLASSROOM STRUCTURE

Classroom structure refers to aspects of programs that are generally amenable to regulation because they are relatively easy to observe and measure. Classroom structure variables are a part of the inputs in the production of quality early care and education services. The classroom structure variables examined here include ratio, group size, teacher education, specialized training, prior child care experience, and tenure in the center. For many of these variables, there were multiple sources of data: information supplied by the center director during the Director Interview, information supplied by the teachers and assistants in the Staff Questionnaire, and information supplied by classroom observations. Results for all of the information collected are reported. In each case, variables were subjected to a two-way ANOVA in order to test the main and interactional effects of state and sector. The three program scope variables were then examined for their impact on each classroom structure variable.

Ratios

Four observed and three reported *adult-child ratio* variables were calculated. Observed ratio variables were collected in observed classrooms with the Observations of Activities in Preschool instrument (Palacios & Lera, 1991). The four observed ratios included the average ratio (of five observations completed throughout most of the day), the midmorning ratio, the indoor ratio, and the outdoor ratio. Ratios reported in the Director Interview were for infants/toddlers, preschoolers, and kindergarten/school-aged children.

Observed Staff-child Ratios

The average adult-child ratio across the day was .18, or about six children per adult. The average midmorning adult-child ratio was .19, or about five children per adult. The average inside adult-child ratio was .18, or about six children per adult. The average outside adult-child ratio was .15, or about seven children per adult. There were significant main effects for state and sector for all four center-weighted observed ratios (see Table 6.9). For the average adult-child ratio across the day and the outside adult-child ratio, Connecticut centers had fewer children per adult than centers in the other three states. For the midmorning adult-child ratio, Connecticut and Colorado centers had fewer children per adult than North Carolina centers. For the indoor adult-child ratio, Connecticut centers had fewer children per adult than North Carolina centers. For all center-weighted observed ratios, nonprofit centers had fewer children per adult than for-profit centers. For all center-weighted observed ratios, program scope explained a significant proportion of the variance after sector, state, and their interaction were controlled. For each ratio, increasing the proportion of infant/toddler enrollment increased the number of adults per child in the weighted center average.

Examining the observed midmorning ratio separately for infant/toddlers and preschoolers, the average midmorning adult-child ratio for infant/toddlers was .28, or about four children per adult (see Table 6.10). California and Connecticut had fewer infant/toddlers per adult than Colorado and North Carolina. Program scope did not explain additional variance in the midmorning ratios for infant/toddlers.

The average midmorning adult-child ratio for preschoolers was .16, or about six children per adult. Connecticut and Colorado had fewer preschoolers per adult than California and North Carolina. Nonprofit centers had fewer preschoolers per adult than for-profit centers. Program scope variables explained a significant proportion of the variance after sector, state, and their interaction were controlled in preschool midmorning ratios. Preschool midmorning ratios improved (the number of children per adult decreased) with increases in the proportion of infant/toddler enrollment.

Reported Ratios

The average adult-child ratio, across all age groups, reported by center directors was .15, or about 6 children per adult (see Table 6.11). The average reported adult-child ratio for infants/toddlers was .26, or about four children per adult. The average reported adult-child ratio for preschoolers was .14, or about seven children per adult. The average reported adult-child ratio for kindergarten/school-aged children was .09, or about 11 children per adult. There were significant effects for state for all reported ratios, and for sector for three of the four reported ratios. There was an interaction between sector and state for reported kindergarten/school-aged ratios. Analysis of the interaction revealed that sector played a role only in Connecticut, with nonprofit centers reporting fewer children per adult than for-profit centers.

Findings were generally consistent with the ratios allowed for by the four states' more and less stringent child care regulations. For the average reported adult-child ratio, Connecticut centers reported fewer children per adult than Colorado centers, who in turn reported fewer children per adult than California and North Carolina centers. For infant/toddlers, Connecticut centers reported fewer children per adult than California and Colorado centers, who in turn reported fewer children per adult than North Carolina centers. For preschoolers, Connecticut centers reported fewer children per adult than Colorado centers, who in turn reported fewer children per adult than California centers, who in turn reported fewer children per adult than North Carolina centers. For kindergarten/school-age children, Connecticut, California, and Colorado centers reported fewer children per adult than North

Carolina centers. Nonprofit centers reported fewer children per adult for the average adult-child ratios and for preschoolers and kindergarten/school-age children.

Program scope variables explained a significant proportion of the variance after sector, state, and their interaction were controlled in all four reported ratios. The average (across all age groups) reported ratio declined (the number of children per adult increased) when the proportion of infants in the center increased. Infant/toddler reported ratios decreased (the number of children per adult increased) with decreases in the proportion of infants in the center. Preschool and kindergarten/school-age reported ratios improved (the number of children per adult decreased) with increases in the proportion of infants in the center.

Group Size

Four variables were calculated relating to observed group size: the average group size, the midmorning group size, the inside group size, and the outdoor group size. The average, midmorning, and inside group size was about 13 children. The outside group size was about 18. The center-weighted observed average and outside group sizes varied significantly by state. No differences in group sizes were discovered for sector (see Table 6.12). California centers had larger average group sizes than centers in the other three states, and California centers' outside group sizes were larger than those in Connecticut and North Carolina.

Program scope variables explained a significant proportion of the variance after sector, state, and their interaction were controlled in all center-weighted observed group sizes. In all observed center-weighted group size measures, group size decreased as the proportion of infants in the center increased. This is not surprising since in all four states regulation requires smaller group sizes for the youngest children in care. Midmorning group sizes decreased when the center had before- and after-school programs.

Examining the midmorning group size separately for infant/toddlers and preschoolers, the average midmorning group size for infant/toddlers was 8 children (see Table 6.13). Group size did not vary by state or sector. Infant/toddler group sizes decreased as the proportion of subsidized children enrolled in the center increased.

The average midmorning group size for preschoolers was about 14 children. Preschool group size did not vary by state or sector. Preschool group sizes decreased as the proportion of infant enrollment increased and also when the center had before- and after-school programs.

Early Childhood Education and Training

Information about early childhood education (ECE) training was examined from two sources. First, ECE training was reported by center directors in the Director Interview and measured by an interval scale ranging from no training to a graduate degree. On the scale, a 1 designated no training, a 2 designated in-service at the center, a 3 designated workshops in the community or at professional meetings, a 4 designated courses in high school or vocational school, a 5 designated Child Development Associate (CDA) training, a 6 designated courses in college, a 7 designated an AA in ECE or child development, an 8 designated a RN degree, a 9 designated a BA/BS degree, a 10 designated graduate courses, and an 11 designated a graduate degree.

The modal ECE training for teachers and teacher-directors was courses in college. The modal ECE training for assistant teachers was Child Development Associate (CDA) training. There were significant effects for both state and sector in the ECE training reported by directors (see Table 6.14). A significant state by sector interaction was found for ECE training for teachers. Analysis of the interaction revealed that sector played a role in Connecticut and North Carolina only, with teachers in nonprofit centers in these states having more ECE training that teachers in for-profit centers. In California and Colorado, ECE training for teachers did not vary by sector. State effects were found for all three types of staff. Teachers in California and Connecticut had more ECE training than teachers in Colorado and North Carolina. Assistant teachers in California, Connecticut, and North Carolina had more ECE training than assistant teachers in Colorado. Teacher-directors in California, Connecticut and Colorado had more ECE training than teacher-directors in North Carolina. Teachers and teacher-directors in nonprofit centers had more ECE training than teachers and teacher-directors in for-profit centers. Higher proportions of infants in a center and the presence of a before- and after-school program were associated with less ECE training for teachers.

Second, teachers in observed classrooms also reported about their ECE training in the Staff Questionnaire (these results are not tabled). Generally, teaching staff in observed classrooms reported having more ECE training than had been reported for teaching staff in all classrooms by center directors. However, the results are similar to those reported above which were based on reports by center directors. The modal ECE training for both teachers and assistant teachers in both infant/toddler and preschool classrooms was an Associate of Arts (AA) degree in ECE or child development. There were significant effects for sector, state, and age group in ECE training for teachers, as well as a significant interaction between sector and age group.

There were differences in training between staff in infant/toddler rooms and preschool rooms. Preschool teachers reported having more ECE training than infant/toddler teachers ($\underline{F}$ (1,658)=10.64, $\underline{p} < .01$). Teachers in Connecticut and California reported having more ECE training than teachers in Colorado who reported having more training than teachers in North Carolina ($\underline{F}$ (3,658)=20.47, $\underline{p} < .001$). Teachers in nonprofit centers had more ECE training than teachers in for-profit centers ($\underline{F}$ (1,658)=4.81, $\underline{p} < .05$). There was a significant interaction for state in teacher ECE training ($\underline{F}$ (5,658)=3.63, $\underline{p} < .05$), such that, for infant/toddler classrooms only, teachers in nonprofit centers had more ECE training than teachers in for-profit centers. Assistant teachers in Connecticut and California had more ECE training than assistant teachers in Colorado and North Carolina ($\underline{F}$ (3,443)=5.78, $\underline{p} < .05$).

An analysis was completed to compare the educational level of the teaching staff in this study with the educational level of teaching staff in two prior studies (see Figure 6.1). The 1977 data comes from the National Day Care Study (Ruopp, Travers, Glantz, & Coelen, 1979) and was collected in Atlanta, Detroit, and Seattle. The 1988 data comes from the National Child Care Staffing Study (Whitebook et al., 1990) and was collected in Atlanta, Detroit, Seattle, Boston, and Phoenix. The proportion of teaching staff with college degrees appears to have remained stable. The proportion of teaching staff with some college increased from 1977 to 1988 but decreased between 1988 and 1993. The proportion of teaching staff with a high school education or less decreased from 1977 to 1988 but increased again from 1988 to 1993.

Formal Education

Information about formal education was examined from two sources, from directors (during the Director Interview) and from classroom staff through Staff Questionnaires. Formal education of teaching staff was reported by directors in years of school completed. The average number of years of formal education completed by teachers was 14, or two years beyond high school (see Table 6.15). The average number of years of formal education completed by assistant teachers was 13, or one year beyond high school. The average number of years of formal education completed by teacher-directors was 15, or three years beyond high school.

There were significant effects for state and sector for the formal education of teachers and teacher-directors as reported by the director. There was an interaction between sector and state for teachers' formal education. Analysis of the interaction revealed that sector played a role in teachers' formal education only in Connecticut and North Carolina, with teachers in nonprofit centers having more formal education than teachers in for-profit centers. In California and Colorado, teachers' formal education did not vary by sector. Teachers and teacher-directors in Colorado and Connecticut had more formal education than teachers in California, whose teachers in turn had more formal education than teachers in North Carolina. Teachers and teacher-directors had more formal education in nonprofit centers than in for-profit centers. Program scope variables predicted significant variance in both teachers' and assistant teachers' formal education. The formal education of teachers decreased with increases in the proportion of infant/toddler enrollment and with the presence of before- and after-school programs. The formal education of assistant teachers decreased with increases in the proportion of infant/toddler enrollment, with increases in the proportion of subsidized children, and with the presence of before- and after-school programs.

Teachers and assistant teachers in observed classrooms also reported their formal education in the Staff Questionnaire (see Table 6.16). Formal education was measured on an interval scale, with 1 designating some high school, 2 designating a high school diploma or GED, 3 designating some college courses, 4 designating Children's Center Permit (California only), 5 designating a two-year college degree, 6 designating a four-year college degree, 7 designating some graduate school courses, and 8 designating a graduate degree. Generally, teachers of infant/toddlers and assistant teachers of preschoolers reported having less formal education than teachers of preschoolers. The modal formal education for teachers and assistant teachers in infant/toddler classrooms was some college courses. The modal formal education for teachers in preschool classrooms was a two-year college degree. The modal formal education for assistant teachers in preschool classrooms was some college courses. Staff reports of formal education were somewhat higher than directors' reports. There were significant main effects for sector, state, and age group in the years of formal education reported by teachers and significant main effects for sector and age group in the years of formal education reported by assistant teachers. Teachers in Connecticut reported that they had more formal education than teachers in California and Colorado who had more formal education than teachers in North Carolina. Teachers and assistant teachers in for-profit centers reported that they had less formal education than their counterparts in nonprofit centers. Teachers and assistant teachers in infant/toddler classrooms reported that they had less formal education than their counterparts in preschool classrooms.

Prior Child Care Experience

The four states varied in regulation about the amount of experience, if any, that was required of teaching staff. North Carolina and California did not have any requirements for prior experience for any teaching staff while Colorado (for all teaching staff) and Connecticut (for all but teacher assistants) allowed experience and training/education to be used in combination or as substitutes for one another. Both center directors and teaching staff in observed classrooms provided information on prior experience in child care. Center directors reported teachers to have had an average of 4 years of prior child care experience, assistant teachers, 2 years, and teacher-directors, 5 years of prior experience (see Table 6.17). There were significant effects for state for teachers' prior experience, and there were significant effects for sector in assistant teachers' and for teacher-directors' prior experience. Teachers in California, Colorado, and Connecticut had more prior experience than teachers in North Carolina. Assistant teachers and teacher-directors in nonprofit centers had more prior experience than assistant teachers and teacher-directors in for-profit centers. Program scope did not explain additional variance in prior experience.

Teachers and assistant teachers also reported their prior experience in child care in the Staff Questionnaire. Teachers in infant/toddler classrooms reported that they had an average of 9 years of prior child care experience (see Table 6.18). Assistant teachers in infant/toddler classrooms reported an average of 5 years of prior experience. Teachers in preschool classrooms reported an average of 9 years of prior experience. Assistant teachers in preschool classrooms reported an average of 7 years of prior experience. Staff reports of prior child care experience were somewhat higher than directors' reports. There was a significant state effect in teachers' years of prior experience and a significant effect for age group in assistant teachers' reports of prior experience. There were significant sector effects for both teachers' and assistant teachers' reports of prior experience. According to staff reports, teachers in Connecticut had more prior experience than teachers in the other three states. Assistant teachers in preschool classrooms had more prior experience than assistant teachers in infant/ toddler classrooms. Teachers and assistant teachers in nonprofit centers had more prior experience than teachers and assistant teachers in for-profit centers.

Tenure in Center

Data on tenure of teachers, assistant teachers and teacher-directors in centers was reported by center directors during completion of the Director Interview. Tenure was reported as the number of months each staff member had been employed at the center. Information on tenure was also collected using the Staff Questionnaire.

For all centers in the four states, according to the director, teachers had worked at the center an average of 43 months, or about 3 and a half years (see Table 6.19). Assistant teachers averaged 26 months, or about 2 years. Teacher-directors averaged 64 months, or about 5 years. There were significant effects for state and sector for center-weighted average months of tenure for teachers, assistant teachers, and teachers directors.

There was also a significant interaction between state and sector for teachers. Analysis of this interaction revealed that sector played a role in teacher tenure only in Connecticut and North Carolina, with teachers in nonprofit centers having more tenure than teachers in for-profit centers. In California and Colorado, teacher tenure did not vary by sector. California and Connecticut teachers and teacher assistants had more tenure than their counterparts in Colorado and North Carolina. Teacher-directors in Connecticut had more tenure than teacher-directors in Colorado and North Carolina. Teachers, teacher assistants, and teacher-directors in nonprofit centers had more tenure than their counterparts in for-profit centers. Program scope explained significant additional variance in tenure. Tenure for teachers, assistant teachers and teacher-directors increased as the proportion of infant enrollment decreased. Tenure increased for assistant teachers and decreased for teacher-directors as the proportion of subsidized children increased.

Information on tenure provided by teachers and assistant teachers in observed classrooms did not differ substantially from that reported by center directors. Teachers in infant/toddler classrooms reported an average of 33 months, or almost 3 years tenure at the center (see Table 6.20). Assistant teachers in infant/toddler classrooms reported 7 months. Teachers in preschool classrooms reported 52 months, or about 4 years. Assistant teachers in preschool classrooms reported 32 months, or almost 3 years. There were significant effects for state, sector, and child age group in the months of tenure reported by staff in observed classrooms.

Teachers in California and Connecticut reported longer tenure than teachers in North Carolina, who reported longer tenure than in Colorado. Assistant teachers in California and Connecticut reported longer tenure than assistant teachers in North Carolina and Colorado. Preschool teachers and assistant teachers reported longer tenure than infant/toddler teachers and assistant teachers. Teachers and assistant teachers in nonprofit centers reported longer tenure than teachers and assistant teachers in for-profit centers.

Relations Among Measures of Classroom Structure

Correlations were computed between selected measures of classroom structure (see Table 6.21). As would be expected, adult-child ratios and group size were negatively associated with each other. Also, ECE training, formal education, and prior experience were positively associated with each other.

DISCUSSION

In general, we found that the levels of process quality required to support children's development are not being met by most child care centers. While there was a great deal of variation in the sample of 401 centers, the mean score on the process quality index was 4.0, a full point below what is considered to be good quality by early childhood professionals.

Infant and toddler care is of grave concern. Quality in rooms caring for infants and toddlers was substantially lower than in rooms caring for older children. The average ITERS Interaction factor score was about a 4, the average Activities factor score was about a 3, and the average Health factor score was 2.5. For infants/toddlers, an ITERS score below 3 indicates that the health and welfare of these very young and vulnerable children is only minimally met. There is a lack of warm, supportive relationships with caring adults - children are rarely held, cuddled, or talked to. There is little use of toys and other materials that encourage physical, social, emotional, and intellectual growth.

Health and safety practices were especially problematic in infant/toddler classrooms. The areas of health practice observed included meals/snacks, diapering/toileting, personal grooming for children, and general health practice. A score of 1 indicates that the procedures were not handled in a sanitary way to avoid the spread of germs. The low mean score for the Health and Safety factor in infant/toddler classrooms indicates that most children were at considerable risk in the majority of classrooms.

Process quality for preschool-age children was found to be somewhat better. Both the ECERS Appropriate Caregiving and the Developmentally Appropriate Activities factor scores were about a 4, indicating a level of care that is considered to be mediocre by early childhood professionals.

Comparing the quality data from this study to the National Child Care Staffing Study data, collected in 1988 (Whitebook, et al., 1990), we see no indications of progress towards higher quality in the five intervening years. ECERS factor scores for preschool groups in 1988 were 4.4 for the Appropriate Caregiving factor and 3.6 for the Developmentally Appropriate Activities factor. In this study, the mean ECERS scores for preschool groups were 4.4 for the Appropriate Caregiving factor and 3.8 for the Developmentally Appropriate Activities factor.

For infants and toddlers, there may have been a decline over the five years in the quality of care and education children receive. Converting this data to the ITERS factors used in the NCCSS, the NCCSS reported ITERS Appropriate Caregiving factor scores of 4.2 and 4.1 for infants and toddlers, respectively, while for this study the ITERS Appropriate Caregiving factor score for the combined group of infant/toddlers was 3.6. The NCCSS scores for the ITERS Developmentally Appropriate Activities factor were 3.2 for infants and 3.6 for toddlers while for this study, the score for the combined group of infants/toddlers was 3.1.

State differences were found in both the classroom process and classroom structure analyses. These differences appear to be associated with child care regulation. Connecticut had the most stringent and North Carolina the least stringent child care regulation at the time of data collection. State and sector also interacted to influence classroom process quality. In California, Colorado, and Connecticut, nonprofit and for-profit centers had similar scores on the process index and its components. However, in North Carolina, nonprofit centers had higher process quality than for-profit centers.

Aspects of program scope had some impact on classroom process. The proportion of infants enrolled at the center and the presence of a before- and after-school program affected the process quality index, the ECERS factors, Caregiver Sensitivity, and Adult Involvement. In general, the higher the proportion of infants enrolled at the center and the presence of a before- and after-school program, the lower the process quality was in the classroom.

Prior research has related the structural variables of ratios and group sizes to other aspects of child care quality. For example, classrooms with fewer children per adult have been found to have higher process quality (e.g. Kontos & Fiene, 1987), more sensitive teacher behaviors (e.g. Biemiller, et al., 1976; Howes, 1983; Howes & Rubenstein, 1985; Whitebook, et al., 1990), and better child development outcomes (e.g. Phillips & Howes, 1987; Howes & Olenick, 1986; Ruopp, et al., 1979). Centers with smaller group sizes have been linked with more positive caregiver and child behaviors (Howes, 1983; Howes & Rubenstein, 1985; Kontos and Fiene, 1987; Ruopp, et al., 1979).

The ratios and group sizes found in this study are similar to those observed in the National Child Care Staffing Study (Whitebook, et al., 1990). They vary considerably by state and are consistent with the differences in stringency of child care standards and monitoring in the four states. In most of the observed and reported ratios, fewer children per adult were found in Connecticut than in the other states, and the most children per adult were found in North Carolina, with California and Colorado falling in between the other two states. California had larger group sizes than the other three states. This finding is consistent with California's lack of regulation for group sizes for child care centers. In terms of sector differences, nonprofit centers had greater adult-child ratios (fewer children per adult) than for-profit centers.

Another aspect of classroom structure is the training, education, and experience of the staff who work with children. The amount of ECE training and formal education has been found to be related to more positive teacher behaviors (e.g. Arnett, 1989; Berk, 1985; Howes, 1983; Ruopp, et al., 1979; Whitebook, et al., 1990) and to better child development outcomes (e.g. Clarke-Stewart & Gruber, 1984; Howes & Olenick, 1986; Ruopp, et al., 1979; Vandell & Powers, 1983; Whitebook, et al., 1990). There are mixed findings about the relationship between teacher's prior child care experience and quality of care. Some work has reported that more experienced caregivers behave more positively toward the children they care for (Howes, 1983), while others have found experience to be linked with less positive caregiver behavior (Ruopp, et al., 1979).

The levels of staff training, education, and experience found in this study varied considerably by state. North Carolina's child care regulations for ECE training and formal education are the least stringent of all the states sampled in this study. Consistent with this regulatory difference, the staff in North Carolina generally had less ECE training and formal education than staff in the other states. Overall, California and Connecticut had staff with the most ECE training and formal education. The four states varied in their regulations about the amount of prior child care experience required of teaching staff. North Carolina and California did not have any requirement for prior experience for any teaching staff while Colorado (for all teaching staff) and Connecticut (for all but teacher assistants) allowed experience and training/education to be used in combination or as substitutes for one another. Overall, the findings with regard to prior experience were somewhat consistent with the variations in child care regulation across the states. The state with the lowest level of teachers' prior experience (North Carolina) also had no requirement for experience.

Sector differences were also found in the training, education, and experience of the staff who work with children. Teachers and teacher-directors in nonprofit centers generally had more ECE training, formal education, and prior experience in child care than the teaching staff in for-profit centers.

The final measure of classroom structure was staff tenure at the center. High teacher turnover is a large problem for child care programs. Higher rates of teacher turnover (which is inversely related to but not quite the same thing as tenure) have been found to relate to less positive teacher and children's behavior (e.g. Cummings, 1980; Howes & Stewart, 1987; Whitebook, et al., 1990). In this study, staff in nonprofit centers had longer tenure than staff in for-profit centers. Also, Connecticut and California had longer tenure among their staff than Colorado and North Carolina.

Program scope impacted the classroom structure variables. In most of the cases where program scope had an impact, increases in the program scope variables (the proportion of infants enrolled in the center; the proportion of subsidized children; or whether the center had a before- and after-school program) were associated with lower values in the classroom structure variables. For example, when centers had a larger proportion of infant/toddler enrollment, the formal education of assistant teachers was lower, and the tenure of teachers, assistant teachers, and teacher-directors was lower. Reported and observed ratios and group sizes improved with the presence of an infant/toddler program, probably due to the more stringent regulations associated with having young children at the center. Similarly, the presence of a before- and after-school program at the center was linked with lower reported ratios (probably due to less stringent ratios required for older children) and less formal education of teachers and assistant teachers. An increase in the percent of subsidized children at the center was associated with less formal education of assistant teachers, longer tenure of assistant teachers, and less tenure of teacher-directors.

In conclusion, more straightforward state and sector differences were found for classroom structure than for classroom process quality. Differences in process quality by state generally followed the differences in child care regulations, with Connecticut being the most stringent and North Carolina the least stringent. The sector differences indicated that nonprofit centers were more stringent in their staffing patterns and teacher requirements than for-profit centers.

In contrast, classroom process was marked by interactions between state and sector. This interaction makes sense, given the regulatory stance of the states involved. Only in North Carolina, the state with the least stringent child care regulations, were many differences between nonprofit and for-profit centers discovered, with lower process quality observed in the for-profit centers. In the other three states with more stringent regulations for child care, differences between nonprofit and for-profit centers were insignificant, possibly because the stringent regulations limited the different choices centers could make. Classroom process quality was generally very high in Connecticut.

These findings highlight the impact that child care regulation has on classroom structure and classroom process. It appears that more stringent regulations for child care centers do impact quality, regardless of the sector in which centers operate.

CONCLUSIONS

These findings about quality of care are generally consistent with findings reported in other recent studies (Scarr, Eisenberg, & Deater-Deckard, 1994; Whitebook et al., 1990). State appears to consistently affect both process and structural classroom quality. Sector appears to influence measures of structural quality more strongly than process quality.

- Child care at most centers in the sample did not meet the "good" standard, which is considered necessary for children's positive development.

- Infant/toddler groups of children suffered lower quality care than older children in centers, especially in the areas that affect the health and safety of these vulnerable children.

- On average, classroom quality was better in states with more stringent child care licensing standards. This held true for most classroom structure variables, including adult-child ratios, group size, teacher early childhood education training and formal education, and teacher tenure at center. Process quality index scores were higher in states with stronger regulation.

- In general, the scores for structural quality variables, which are generally associated with classroom process quality - including adult-child ratios, staff early childhood education training, formal education, prior experience, and tenure at center - were higher in nonprofit centers than in for-profit centers.

- Process quality scores were higher in nonprofit centers than in for-profit centers only in the state with the least stringent regulation of child care centers.

- In most of the cases where program scope had an impact, increases in the program scope variables (the proportion of infants enrolled in the center; the proportion of subsidized children; or whether the center had a before- and after-school program) were associated with lower values in the classroom structure variables.

Chapter 6 Appendix

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Table 6.1

Measures of Center Process Quality

		MEANS BY STATE AND SECTOR									ANOVAS				ANCOVAS			
		CA		CO		CT		NC		TOTAL		F-tests			Standardized Regression Coefficients			
		NP	P	NP	P	NP	P	NP	P		R-square	State	Sector	State x Sector	R-square	% Sbsd	% Infant	SA Care
CENTER QUALITY INDEX (Scaled to the ECERS)	N	50	49	50	50	48	51	50	50	398	0.20	18.60** CA,CT>CO>NC	13.96** NP>P	6.34** NC: NP>P all other NP=P	0.22	-0.03	-0.10	-0.16**
	MEAN	4.4	4.2	3.9	3.8	4.3	4.4	4.1	3.2	4.0								
	STD	0.9	0.7	0.8	0.6	0.8	0.8	0.8	0.7	0.9								
ECERS																		
Caregiving	N	49	48	46	48	47	49	50	48	385	0.21	14.39** NC<all, CO<CA	15.16** NP>P	12.33*** only NC: NP>P	0.23	-0.04	-0.11*	-0.14**
	MEAN	4.9	4.6	4.4	4.2	4.4	4.8	4.5	3.2	4.4								
	STD	1.0	0.8	0.9	1.0	1.0	1.1	1.2	0.9	1.1								
Activities	MEAN	4.2	3.7	3.8	3.7	3.9	4.3	4.0	3.1	3.8	0.10	5.79** NC<CA,CT	6.26* NP>P	5.77** CA,NC: NP>P	0.14	0.02	-0.14*	-0.22***
	STD	1.1	1.0	1.1	1.1	1.3	1.2	1.0	0.8	1.1								
ITERS																		
Interaction	N	11	16	16	41	23	36	31	45	219	0.18	8.01** NC<all, CO<CT	4.90* NP>P	3.83** only NC: NP>P	0.20	-0.07	-0.12	-0.10
	MEAN	4.5	4.8	4.0	4.0	4.5	4.6	4.2	3.0	4.1								
	STD	1.2	1.3	1.3	1.3	1.4	1.4	1.4	1.2	1.4								
Activities	MEAN	3.2	3.7	3.2	3.3	3.7	3.9	3.2	2.4	3.3	0.22	11.37** all>NC, CO<CT	0.64	4.61** CO,NC: NP>P	0.23	-0.07	-0.10	-0.14
	STD	1.0	0.6	1.1	0.9	1.2	1.1	1.2	0.6	1.1								
Health	MEAN	2.3	2.5	3.5	2.8	2.9	3.3	2.1	1.5	2.5	0.22	15.57*** CT,CO>CA>NC	0.78	2.5* CO,NC: NP>P	0.23	-0.06	-0.04	-0.12
	STD	1.2	1.2	1.4	1.4	1.4	1.5	1.5	0.6	1.4								
CAREGIVER INTERACTION (1)																		
Sensitivity	N	50	49	50	50	48	51	50	50	398	0.20	25.39*** CT>CA>CO>NC	5.23* NP>P	5.42** NC: NP>P	0.23	-0.07	-0.10*	-0.16**
	MEAN	2.8	2.8	2.6	2.5	3.0	3.0	2.6	2.1	2.7								
	STD	0.6	0.6	0.6	0.6	0.7	0.7	0.7	5.0	0.7								
Harshness	MEAN	1.6	1.7	1.8	1.7	1.7	1.5	1.8	2.1	1.7	0.09	8.09** NC>all	0.97	3.36** NC: NP<P	0.09	0.05	0.00	0.07
	STD	0.5	0.5	0.6	0.5	0.5	0.6	0.6	0.7	0.6								
Detachment	MEAN	1.5	1.5	1.8	1.7	1.5	1.5	1.6	2.2	1.7	0.18	14.19** NC>CO>CT,CA	8.23** NP<P	9.75** NC: NP<P	0.18	0.00	0.06	0.04
	STD	0.5	0.5	0.4	0.5	0.5	0.6	0.5	0.7	0.6								
Permissiveness	MEAN	2.5	2.7	2.6	2.5	2.7	2.5	2.7	2.7	2.6	0.03	0.98	0.26	2.1* only CT: NP>P	0.04	0.03	-0.06	0.08
	STD	0.5	0.6	0.6	0.4	0.5	0.6	0.5	0.5	0.5								
ADULT INVOLVEMENT																		
Percent Ignore	MEAN	0.30	0.34	0.26	0.30	0.21	0.19	0.27	0.33	0.28	0.08	8.96** CT<all	2.59	0.88	0.08	-0.04	-0.02	0.01
	STD	0.17	0.18	0.19	0.17	0.18	0.18	0.17	0.19	0.18								
Percent Low Level	MEAN	0.29	0.30	0.41	0.40	0.32	0.40	0.33	0.36	0.35	0.06	9.54* CT>CA CO<CA,NC	2.17	1.07	0.10	0.06	-0.17**	0.10
	STD	0.15	0.16	0.23	0.17	0.17	0.26	0.17	0.20	0.20								
Percent Responsive	MEAN	0.38	0.31	0.27	0.26	0.46	0.39	0.37	0.30	0.34	0.09	9.5* CT>CA,NC>CO	5.7* NP>P	0.98	0.13	-0.01	0.16**	-0.08
	STD	0.23	0.20	0.23	0.16	0.21	0.23	0.20	0.20	0.22								

***p<.001
**p<.01
*p<.05

1 The sample size of the Caregiver interaction scale is the same for all factors

% SBSDY = % of enrollment that is subsidized
% Infant = % enrollment that is infant-toddler
SA Care = Care of School-aged children

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Table 6.2

Measures of Process Quality by Age Group

		MEANS BY STATE AND SECTOR									ANOVAS			
		CA		CO		CT		NC		TOTAL		F-tests		
		NP	P	NP	P	NP	P	NP	P		R-square	State	Sector	State x Sector
Infant-toddlers	N	12	16	19	42	23	37	31	45	225				
	MEAN	4.20	4.40	4.00	3.70	4.40	4.30	3.90	3.30	3.90	0.22	14.59***	7.83**	2.57
	STD	0.76	0.67	0.81	0.69	1.00	0.79	0.86	0.76	0.88		CA&CT > NC CT > CO	NP > P	
Preschoolers	N	82	81	67	54	64	52	62	49	511				
	MEAN	4.30	4.10	3.90	3.80	4.30	4.40	4.10	3.10	4.00	0.15	16.52***	15.94***	8.00***
	STD	0.93	0.80	0.80	0.69	0.89	0.89	0.92	0.83	0.92		CA&CT > NC&CO	NP > P	only NC: NP > P

***p<.001
**p<.01
*p<.05

% SBSDY = % of enrollment that is subsidized
% Infant = % enrollment that is infant-toddler
SA Care = Care of School-aged children

Table 6.3
Caregiver Interactions (Arnett Scale) by Age Group

		MEANS BY STATE AND SECTOR									ANOVAS			
		CA		CO		CT		NC		TOTAL		F-tests		
		NP	P	NP	P	NP	P	NP	P		R-square	State	Sector	State x Sector
INFANT-TODDLERS														
	N	12	16	19	42	23	37	31	45	225				
Sensitity	MEAN	2.80	3.10	2.60	2.60	3.00	3.00	2.60	2.20	2.70	0.15	10.55***	1.02	1.52
	STD	0.62	0.67	0.62	0.73	0.77	0.70	0.71	0.72	0.75		CA,CT > NC CT > CO		
Harshness	MEAN	1.30	1.30	1.50	1.50	1.50	1.50	1.30	1.70	1.50	0.04	0.99	1.72	1.33
	STD	0.29	0.41	0.66	0.50	0.67	0.63	0.42	0.78	0.60				
Detachment	MEAN	1.40	1.20	1.60	1.70	1.50	1.50	1.70	2.10	1.70	0.14	3.70***	3.57	1.92
	STD	0.52	0.38	0.61	0.57	0.82	0.54	0.58	0.80	0.68		NC > CA,CT		
Permissiveness	MEAN	2.20	2.20	2.30	2.30	2.40	2.40	2.10	2.20	2.20	0.02	1.47	0.05	0.11
	STD	0.49	0.55	0.94	0.64	0.75	0.66	0.51	0.71	0.67				
PRESCHOOLERS														
	N	82	81	67	54	52	64	62	49	511				
Sensitity	MEAN	2.80	2.70	2.50	2.50	3.00	3.10	2.60	2.00	2.70	0.17	25.32***	7.97**	6.67***
	STD	0.68	0.61	0.64	0.64	0.76	0.72	0.74	0.56	0.73		CT > all CA > NC,CO	NP > P	only NC: NP > P
Harshness	MEAN	1.70	1.80	1.80	1.80	1.70	1.60	1.90	2.40	1.80	0.09	11.86***	3.42	4.49**
	STD	0.64	0.63	0.65	0.61	0.57	0.55	0.71	0.88	0.69		NC > all		only NC: P > NP
Detachment	MEAN	1.50	1.60	1.80	1.70	1.50	1.50	1.50	2.30	1.70	0.12	8.90***	9.43**	10.22***
	STD	0.59	0.61	0.54	0.57	0.55	0.60	0.62	0.79	0.64		NC > CO,CT CO > CA	P > NP	only NC: P > NP
Permissiveness	MEAN	2.60	2.80	2.60	2.60	2.80	2.60	2.80	3.00	2.70	0.04	3.83*	0.54	2.28
	STD	0.60	0.68	0.69	0.58	0.63	0.63	0.56	0.71	0.65		NC > CO		

***p<.001
**p<.01
*p<.05

% SBSDY = % of enrollment that is subsidized
% Infant = % enrollment that is infant-toddler
SA Care = Care of School-aged children

Table 6.4

Adult Involvement by Age Group

		MEANS BY STATE AND SECTOR									ANOVAS			
		CA		CO		CT		NC		TOTAL		F-tests		
		NP	P	NP	P	NP	P	NP	P		R-square	State	Sector	State x Sector
INFANT-TODDLERS														
	N	12	16	19	42	23	37	31	45	225				
Percent Ignore	MEAN	0.35	0.29	0.21	0.35	0.16	0.18	0.26	0.32	0.27	0.12	7.13***	3.70	1.80
	STD	0.21	0.18	0.14	0.22	0.21	0.19	0.16	0.18	0.20		CT < all		
Percent Low Level	MEAN	0.16	0.20	0.36	0.37	0.20	0.35	0.26	0.30	0.30	0.12	5.77**	5.97*	1.53
	STD	0.09	0.17	0.20	0.17	0.14	0.25	0.15	0.19	0.19		CO > CA	P > NP	
Percent Responsive	MEAN	0.49	0.51	0.41	0.28	0.64	0.47	0.47	0.38	0.43	0.16	8.67***	11.01**	1.05
	STD	0.27	0.24	0.26	0.20	0.27	0.28	0.21	0.21	0.26		CT > CO,NC CA > CO	NP > P	
PRESCHOOLERS														
	N	82	81	67	54	64	52	62	0.49	511				
Percent Ignore	MEAN	0.30	0.35	0.28	0.26	0.22	0.20	0.28	0.35	0.28	0.04	6.16***	1.16	1.14
	STD	0.23	0.25	0.22	0.22	0.20	0.21	0.21	0.25	0.23		CT < CA,NC		
Percent Low Level	MEAN	0.31	0.32	0.42	0.41	0.35	0.41	0.36	0.39	0.36	0.03	4.30**	1.32	0.49
	STD	0.20	0.23	0.27	0.22	0.25	0.30	0.21	0.26	0.24		CO > CA		
Percent Responsive	MEAN	0.35	0.28	0.24	0.27	0.42	0.36	0.33	0.25	0.31	0.05	6.45***	4.64*	1.40
	STD	0.26	0.21	0.26	0.23	0.27	0.29	0.23	0.22	0.25		CT > CO,NC	NP > P	

***$p<.001$
**$p<.01$
*$p<.05$

% SBSDY = % of enrollment that is subsidized
% Infant = % enrollment that is infant-toddler
SA Care = Care of School-aged children

Table 6.5

Center Peer Play Scale (Adjusted for Age of Child)

		MEANS BY STATE AND SECTOR									ANOVAS				ANCOVAS			
		CA		CO		CT		NC		TOTAL		F-tests				Standardized Regression Coefficients		
		NP	P	NP	P	NP	P	NP	P		R-square	State	Sector	State x Sector	R-square	% Sbsd	% Infant	SA Care
	N	50	49	50	50	48	51	50	50	398								
Percent Unoccupied	MEAN	0.01	0.01	0.01	0.01	0.02	0.01	0.01	0.01	0.01	0.02	3.00*	0.64	0.89	0.03	-0.01	0.04	0.08
	STD	0.01	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02		CT>all						
Percent Solitary	MEAN	0.24	0.27	0.28	0.28	0.27	0.23	0.23	0.23	0.25	0.04	3.00*	0.75	0.44	0.04	0.03	0.04	0.00
	STD	0.12	0.11	0.11	0.11	0.11	0.12	0.13	0.12	0.12		all>NC						
Percent High Social	MEAN	0.34	0.36	0.28	0.29	0.39	0.40	0.36	0.39	0.35	0.10	11.50***	0.85	1.41	0.12	-0.12*	-0.05	-0.08
	STD	0.12	0.14	0.16	0.14	0.13	0.15	0.14	0.15	0.15		all>CO						
Percent Pretend	MEAN	0.05	0.05	0.04	0.04	0.03	0.02	0.03	0.02	0.04	0.03	3.06*	0.66	0.34	0.04	-0.11*	-0.04	-0.05
	STD	0.05	0.07	0.04	0.04	0.03	0.05	0.03	0.02	0.06		CA>all						
Mean Level	MEAN	1.10	1.10	1.00	1.00	1.10	1.10	1.00	1.10	1.10	0.03	3.45*	0.42	0.32	0.03	-0.03	0.00	0.00
	STD	0.41	0.27	0.27	0.22	0.28	0.20	0.27	0.21	0.28		CA>CT>NC>CO						

***p<.001
**p<.01
*p<.05

% SBSDY = % of enrollment that is subsidized
% Infant = % enrollment that is infant-toddler
SA Care = Care of School-aged children

Table 6.6

Center Scores for Child-Centered Emphasis

		MEANS BY STATE AND SECTOR									ANOVAS				ANCOVAS			
		CA		CO		CT		NC		TOTAL		F-tests			Standardized Regression Coefficients			
		NP	P	NP	P	NP	P	NP	P		R-square	State	Profit	State x Profit	R-square	% Sbsd	% Infant	SA Care
	N	48	48	48	47	46	47	50	48	382								
Academic Emphasis	MEAN	-0.02	-0.25	0.01	0.00	0.08	0.28	0.33	-0.38	0.01	0.11	3.81**	7.9**	8.70*	0.12	-0.01	0.00	-0.10
	STD	0.71	0.69	0.45	0.55	0.73	0.69	0.69	0.61	0.68		CT>CA,NC	N>P	only NC: NP>P				
Child Initiated	MEAN	0.07	0.08	-0.02	-0.05	-0.05	0.21	0.24	-0.47	0.00	0.09	1.78	2.01	8.85**	0.10	-0.04	0.00	-0.10
	STD	0.63	0.63	0.63	0.58	0.69	0.77	0.81	0.66	0.71				only NC: NP>P				
Discipline	MEAN	-0.11	0.00	0.01	-0.04	-0.12	-0.24	0.09	0.63	0.03	0.08	7.10***	1.90	2.90*	0.09	0.08	0.05	0.07
	STD	0.83	0.88	0.82	0.91	0.84	0.72	0.92	0.88	0.88		NC>all		only NC: P>NP				
Evaluation	MEAN	0.03	0.10	-0.14	-0.19	0.02	0.00	-0.07	0.17	-0.01	0.04	3.10*	1.10	1.14	0.04	0.04	0.02	-0.01
	STD	0.70	0.68	0.46	0.41	0.62	0.68	0.53	0.58	0.59		NC<all						
Performance Pressure	MEAN	-0.07	0.03	-0.08	-0.01	-0.03	-0.31	-0.01	0.52	0.01	0.10	7.00***	2.20	5.80**	0.11	0.06	0.02	0.11
	STD	0.71	0.66	0.55	0.60	0.71	0.60	0.68	0.75	0.69		NC>all		NC,CT: NP<P				

***p<.001
**p<.01
*p<.05

% SBSDY = % of enrollment that is subsidized
% Infant = % enrollment that is infant-toddler
SA Care = Care of School-aged children

Note: Higher scores indicate more developmentally appropriate centers.

Table 6.7

Observation of Activities in Preschool Classrooms
Significant Cluster Differences in Quality

	MEANS		T-VALUE
	Cluster 1 (n = 257)	Cluster 2 (n = 175)	
PROCESS QUALITY INDEX	0.30	-2.5	4.2***
ECERS	4.44	4.04	4.3***
Appropriate Caregiving	4.61	4.18	4.1***
Dev. Appropriate Activities	4.07	3.55	4.8***
ARNETT	3.04	2.87	3.4***
Sensitivity	2.81	2.51	4.3***
Harshness	1.74	1.90	-2.3*
CHILD-CENTERED EMPHASIS	0.09	-0.14	3.9***
TEACHER INVOLVEMENT			
Percent Teacher Responsive	0.34	0.28	2.3*
Percent Teacher Ignore	0.26	0.31	-2.2*

***p<.001
**p<.01
*p<.05

Table 6.8

Associations Between Classroom Process Measures: Simple Correlation Coefficients

Row No.	1	2	3	4	5
1. Process Index	1.00	0.90**	0.92**	0.06	0.12*
2. ECERS/ITERS (depending on age of children)		1.00	0.76**	-0.02	0.12*
3. Arnett			1.00	0.06	0.08
4. Adult Involvement				1.00	-0.07
5. Peer Play					1.00

Note: All scores are total scores for the measure

***p<.001
**p<.01
*p<.05

Table 6.9

Observed Center Average Adult:Child Ratios by Time of Day

		MEANS BY STATE AND SECTOR									ANOVAS				ANCOVAS			
												F-tests			Standardized Regression Coefficients			
		CA		CO		CT		NC		TOTAL								
		NP	P	NP	P	NP	P	NP	P		R-square	State	Sector	State x Sector	R-square	% Sbsd	% Infant	SA Care
Average Adult:Child Ratio	N	48	49	50	48	49	49	50	48	391								
	MEAN	0.19	0.14	0.19	0.16	0.24	0.20	0.16	0.18	0.18	0.06	4.92**	4.40*	1.66	0.09	0.07	0.24**	-0.02
	STD	0.12	0.11	0.09	0.06	0.10	0.09	0.09	0.22	0.12		CT>all	NP>P					
Mid-morning Adult:Child Ratio	N	49	49	50	49	49	49	50	49	394								
	MEAN	0.21	0.15	0.22	0.17	0.25	0.20	0.16	0.14	0.19	0.07	5.20**	10.87**	0.31	0.10	0.07	0.27***	0.01
	STD	0.15	0.15	0.22	0.08	0.14	0.13	0.10	0.11	0.14		CT,CO>NC	NP>P					
Indoor Adult:Child Ratio	N	48	49	50	48	49	49	50	48	391								
	MEAN	0.19	0.15	0.19	0.16	0.24	0.20	0.16	0.18	0.18	0.05	3.40*	3.72*	1.52	0.07	0.07	0.22**	-0.02
	STD	0.13	0.12	0.09	0.06	0.11	0.09	0.09	0.27	0.14		CT>NC	NP>P					
Outside Adult:Child Ratio	N	40	43	25	25	24	25	29	25	236								
	MEAN	0.15	0.13	0.15	0.12	0.22	0.18	0.14	0.13	0.15	0.03	8.9	5.79*	0.64	0.13	0.03	0.32***	-0.07
	STD	0.06	0.07	0.05	0.07	0.12	0.08	0.07	0.07	0.08		CT>all	NP>P					

***p< .001
**p< .01
*p< .05

% SBSDY = % of enrollment that is subsidized
% Infant = % enrollment that is infant-toddler
SA Care = Care of School-aged children

Table 6.10

Observed Center Adult:Child Ratios by Age Groups

		MEAN BY STATE AND SECTOR									ANOVAS				ANCOVAS			
		CA		CO		CT		NC		TOTAL		F-tests			Standardized Regression Coefficients			
		NP	P	NP	P	NP	P	NP	P		R-square	State	Sector	State x Sector	R-square	% Sbsd	% Infant	SA Care
Infant/Toddler Mid-morning Adult:Child Ratio	N	8	14	10	23	14	25	23	40	157								
	MEAN	0.38	0.36	0.29	0.27	0.35	0.32	0.26	0.18	0.28	0.20	8.80***	2.50	0.40	0.22	0.12	0.10	0.06
	STD	0.22	0.20	0.14	0.12	0.12	0.13	0.10	0.12	0.15		CA,CT>CO,NC						
Preschool Mid-morning Adult:Child Ratio	N	49	48	46	45	47	48	50	48	381								
	MEAN	0.17	0.12	0.21	0.15	0.22	0.16	0.15	0.12	0.16	0.10	6.60**	21.2**	0.50	0.14	0.08	0.18**	0.02
	STD	0.08	0.04	0.22	0.06	0.10	0.08	0.10	0.08	0.11		CT,CO>CA,NC	NP > P					

***p< .001
**p< .01
*p< .05

% SBSDY = % of enrollment that is subsidized
% Infant = % enrollment that is infant-toddler
SA Care = Care of School-aged children

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Table 6.11

Center Average Adult:Child Ratios (Reported by Directors)

		MEAN BY STATE AND SECTOR									ANOVAS				ANCOVAS Standardized Regression Coefficients			
		CA		CO		CT		NC		TOTAL		F-tests						
		NP	P	NP	P	NP	P	NP	P		R-square	State	Sector	State x Sector	R-square	% Sbsd	% Infant	SA Care
	N	51	49	50	50	49	52	50	50	401								
Average	MEAN	0.15	0.12	0.16	0.15	0.19	0.20	0.13	0.12	0.15	0.06	35.84***	5.13*	1.22	0.12	0.07	0.25***	0.00
	STD	0.05	0.04	0.06	0.05	0.06	0.07	0.05	0.04	0.06		CT>CO>CA,NC	NP>P					
	N	19	18	18	42	25	39	36	48	245								
Infant/toddlers	MEAN	0.24	0.28	0.26	0.24	0.33	0.33	0.21	0.19	0.26	0.29	28.7***	0.00	1.38	0.30	0.00	-0.15*	-0.09
	STD	0.09	0.15	0.05	0.07	0.11	0.08	0.07	0.07	0.10		CT>CA,CO>NC						
	N	49	48	49	46	48	49	49	47	385								
Preschoolers	MEAN	0.15	0.12	0.16	0.14	0.18	0.17	0.12	0.11	0.14	0.19	25.10**	11.77***	0.68	0.23	0.09	0.17**	-0.06
	STD	0.05	0.04	0.05	0.05	0.05	0.06	0.05	0.07	0.06		CT>CO>CA>NC	NP>P					
	N	19	25	27	40	18	28	18	38	213								
Kindergarten-School Age	MEAN	0.11	0.09	0.11	0.10	0.16	0.09	0.05	0.05	0.09	0.28	18.70***	12.77***	3.95**	0.30	-0.06	0.17*	0.02
	STD	0.03	0.04	0.04	0.05	0.10	0.06	0.03	0.03	0.06		all>NC	NP>P	only CT: NP>P				

***p<.001
**p<.01
*p<.05

% SBSDY = % of enrollment that is subsidized
% Infant = % enrollment that is infant-toddler
SA Care = Care of School-aged children

Table 6.12

Observed Center Average Group Size by Time of Day and Location

		MODES BY STATE AND SECTOR									ANOVAS F-tests				ANCOVAS Standardized Regression Coefficients			
		CA		CO		CT		NC		TOTAL								
		NP	P	NP	P	NP	P	NP	P		R-square	State	Sector	State x Sector	R-square	% Sbsd	% Infant	SA Care
Average Overall	N	48	49	50	48	49	49	50	48	391								
	MEAN	16.30	15.30	14.20	13.70	11.60	12.10	14.80	11.60	13.40	0.07	6.76***	2.86	1.58	0.14	-0.01	-0.35**	-0.08
	STD	6.20	6.60	6.40	7.30	5.10	6.00	5.50	5.40	6.40		CA>all						
Mid-morning	MEAN	14.00	13.80	12.40	13.20	10.90	12.80	13.60	11.00	12.70	0.03	1.46	0.00	1.83	0.07	0.02	-0.27***	-0.13*
	STD	6.70	7.40	6.10	10.70	4.60	8.50	5.70	5.80	7.20								
Inside	MEAN	14.10	13.70	13.70	13.10	11.30	12.00	14.20	11.30	12.90	0.04	2.61	1.81	1.61	0.10	0.02	-0.31***	-0.07
	STD	5.60	6.20	6.30	7.00	4.50	6.00	5.10	5.40	6.00								
Outside	N	40	43	25	25	24	26	29	25	237								
	MEAN	23.00	19.10	18.40	17.60	15.60	13.30	18.60	15.10	18.10	0.07	4.38**	3.60	0.24	0.12	-0.05	-0.28***	-0.05
	STD	11.60	12.20	8.70	9.50	11.90	6.30	12.30	7.50	10.80		CA>CT,NC						

***p< .001
**p< .01
*p< .05

% SBSDY = % of enrollment that is subsidized
% Infant = % enrollment that is infant-toddler
SA Care = Care of School-aged children

Table 6.13

Observed Average Group Size by Age Groups

		MEAN BY STATE AND SECTOR									ANOVAS F-tests				ANCOVAS Standardized Regression Coefficients			
		CA		CO		CT		NC		TOTAL								
		NP	P	NP	P	NP	P	NP	P		R-square	State	Sector	State x Sector	R-square	% Sbsd	% Infant	SA Care
Infants/Toddler	N	8	14	10	23	14	25	23	40	157								
Mid-morning	MEAN	9.20	7.30	6.80	7.70	8.30	7.20	8.70	8.60	8.00	0.04	1.30	0.80	0.90	0.08	-0.21*	0.01	-0.01
	STD	5.30	3.20	2.00	3.50	3.40	2.80	2.10	3.70	3.30								
Preschool	N	49	48	46	45	47	48	50	48	381								
Mid-morning	MEAN	14.70	14.40	13.00	13.70	11.50	13.20	14.30	14.70	13.70	0.02	2.20	0.08	0.30	0.07	0.04	-0.25***	-0.11*
	STD	6.30	6.60	5.70	10.50	4.10	8.30	5.90	7.20	7.00								

***p< .001
**p< .01
*p< .05

% SBSDY = % of enrollment that is subsidized
% Infant = % enrollment that is infant-toddler
SA Care = Care of School-aged children

Table 6.14

Center Average ECE Staff Training Reported by Directors

		MODES BY STATE AND SECTOR									ANOVAS				ANCOVAS			
		CA		CO		CT		NC		TOTAL	F-tests				Standardized Regression Coefficients			
		NP	P	NP	P	NP	P	NP	P		R-square	State	Sector	State x Sector	R-square	% Sbsd	% Infant	SA Care
Teachers	N	50	49	47	50	47	50	50	49	392								
	MODE	6	6	6	6	9	6	5	5	6	0.15	13.06*** CT,CA>CO,NC	20.04*** NP>P	3.30* CT,NC N>P	0.17	0.01	-0.15**	-0.11*
Assistant Teachers	N	41	35	45	47	41	48	39	29	325								
	MODE	6	6	4	4	5	3	3	3	5	0.07	7.68** all>CO	0.27	0.23	0.07	-0.04	-0.05	-0.02
Teacher-Directors	N	21	20	34	28	18	15	19	20	175								
	MODE	10	9	6	6	11	9	9	3	6	0.15	5.56** NC<all	8.96*** NP>P	1.2	0.17	-0.04	-0.11	-0.14

Note: Numbers tabled are modal level. ANOVA completed on mean values. Scale points are 1. no training 2. in-service at center 3. workshops in the community or at professional meetings 4. courses in high school or vocational school 5. CDA training 6. Courses in a college 7. AA in ECE or child development 8. RN 9. BA/BS degree 10. graduate courses 11. graduate degree

***p<.001
**p<.01
*p<.05

% SBSDY = % of enrollment that is subsidized
% Infant = % enrollment that is infant-toddler
SA Care = Care of School-aged children

Table 6.15

Center Staff Average Years of Formal Education Reported by Directors

		MEANS BY STATE AND SECTOR									ANOVAS				ANCOVAS			
		CA		CO		CT		NC		TOTAL	F-tests				Standardized Regression Coefficients			
		NP	P	NP	P	NP	P	NP	P		R-square	State	Sector	State x Sector	R-square	% Sbsd	% Infant	SA Care
Teachers	N	50	49	47	50	47	50	50	49	392								
	MEAN	14.1	14.1	14.5	14.3	15.0	14.4	13.8	13.0	14.1	0.15	17.15*** CT,CO>CA>NC	11.09** NP>P	2.00* CT,NC NP>P	0.18	0.01	-0.17**	-0.12*
	STD	1.3	1.2	1.3	1.4	1.1	1.2	1.2	1.1	1.4								
Assistant Teachers	N	41	35	45	47	41	48	39	29	325								
	MEAN	12.6	12.9	12.9	12.6	13.0	13.2	12.8	12.9	12.9	0.03	1.56	0.31	1.61	0.08	-0.12*	-0.22***	-0.14*
	STD	1.2	1.3	1.5	1.2	1.3	1.2	1.9	1.2	1.4								
Teacher-directors	N	21	20	34	28	18	15	19	20	175								
	MEAN	15.2	14.7	15.6	15.0	16.1	15.9	14.8	13.4	15.1	0.16	7.10*** CT,CO>CA>NC	6.53** NP>P	0.75	0.18	0.01	-0.09	-0.17
	STD	1.8	2.0	1.6	1.8	2.2	1.5	1.8	1.7	1.9								

***p<.001
**p<.01
*p<.05

% SBSDY = % of enrollment that is subsidized
% Infant = % enrollment that is infant-toddler
SA Care = Care of School-aged children

Table 6.16

Years of Formal Education Reported by Staff in Observed Classrooms

		MODES BY STATE AND SECTOR									ANOVAS			
		CA		CO		CT		NC		TOTAL	F-tests			
		NP	P	NP	P	NP	P	NP	P		Age Group	State	Sector	State x Sector
INFANT-TODDLER CLASSROOM											Teachers			
	N	11	16	14	34	18	30	31	40	194	16.60**	17.41***	5.52*	1.15
Teachers	MODE	5	5	5	3	5	6	3	3	3	Pr>IT	CT>CA,CO>NC	NP>P	
											Assistant Teachers			
Assistant	N	9	12	14	27	17	27	26	19	151	13.52**	1.57	13.06**	2.14
Teachers	MODE	3	3	2	3	3	3	3	2	3	Pr>IT		NP>P	
PRESCHOOL CLASSROOMS														
	N	79	73	59	45	54	54	49	64	477				
Teachers	MODE	6	5	5	5	7	6	6	2	5				
Assistant	N	40	28	35	33	34	32	37	17	256				
Teachers	MODE	3	3	3	3	3	4	3	2	3				

Note. Numbers in table are modal level, analysis completed on means.
Levels: 1. some high school 2. high school graduate or GED 3. some college courses 4. If in California, Children's Center Permit 5. two year college degree 6. four year college degree 7. some graduate school 8. graduate degree

***p<.001
**p<.01
*p<.05

Table 6.17

Staff Years of Prior Experience in Child Care Reported by Directors

		MEANS BY STATE AND SECTOR									ANOVAS				ANCOVAS			
		CA		CO		CT		NC		TOTAL	F-tests				Standardized Regression Coefficients			
		NP	P	NP	P	NP	P	NP	P		R-square	State	Sector	State x Sector	R-square	% Sbsd	% Infant	SA Care
Teachers	N	50	49	47	49	47	48	50	49	389								
	MEAN	4.4	4.2	4.7	4.1	4.5	3.4	3.2	2.9	3.9	0.04	3.61*	2.77	0.30	0.05	0.08	0.06	0.07
	STD	3.7	3.8	3.3	3.1	3.6	2.9	2.7	2.4	3.4		All>NC						
Assistant	N	41	35	45	45	37	46	39	29	317								
Teachers	MEAN	2.0	2.1	1.9	0.9	2.7	1.1	3.1	0.8	1.8	0.07	0.98	14.08***	2.43	0.08	-0.04	0.03	-0.07
	STD	1.9	2.9	2.2	1.1	3.1	1.2	5.7	1.1	2.8			NP>P					
Teacher-director	N	21	20	34	28	18	15	19	20	175								
	MEAN	7.9	4.0	7.2	4.3	5.3	6.3	4.7	3.1	5.4	0.09	1.36	5.2*	1.53	0.10	0.05	-0.03	-0.13
	STD	5.4	2.7	6.0	4.2	6.2	7.3	5.2	3.5	5.3			NP>P					

***p<.001
**p<.01
*p<.05

% SBSDY = % of enrollment that is subsidized
% Infant = % enrollment that is infant-toddler
SA Care = Care of School-aged children

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Table 6.18

Years of Prior Experience Reported by Staff in Observed Classrooms

		MEANS BY STATE AND SECTOR									ANOVAS			
		CA		CO		CT		NC		TOTAL	F-tests			
		NP	P	NP	P	NP	P	NP	P		Age Group	State	Sector	State x Sector
INFANT-TODDLER CLASSROOMS														
Teachers	N	11	16	14	34	18	30	29	37	194	Teachers			
	MEAN	8.4	6.7	8.2	9.6	11.6	9.6	8.2	8.8	9.0	0.05	3.43* CT>all	10.41** NP>P	2.46
	STD	6.8	6.3	7.6	8.2	10.3	8.2	6.3	8.0	7.7				
Assistant Teachers	N	8	12	12	26	18	26	24	17	143	Assistant Teachers			
	MEAN	6.3	3.3	5.0	4.7	6.9	4.7	6.0	6.3	5.4	5.32* PR>IT	1.75	4.87* NP>P	0.30
	STD	3.4	3.1	4.7	4.1	4.9	3.5	5.4	4.8	4.4				
PRESCHOOL CLASSROOMS														
Teachers	N	79	72	58	45	53	43	61	46	457				
	MEAN	11.2	10.3	9.2	8.8	11.6	7.1	9.8	5.4	9.5				
	STD	6.7	7.0	5.3	5.8	6.9	4.7	7.6	3.4	6.5				
Assistant Teachers	N	52	29	43	33	45	31	41	15	289				
	MEAN	6.2	6.0	7.1	6.3	8.7	7.0	7.2	4.2	6.8				
	STD	5.1	5.6	8.1	5.2	6.1	3.9	6.6	5.4	6.0				

***p< .001
**p< .01
*p< .05

Table 6.19

Staff Average Months of Tenure in Center Reported by Directors

		MEANS BY STATE AND SECTOR									ANOVAS				ANCOVAS			
		CA		CO		CT		NC		TOTAL	F-tests				Standardized Regression Coefficients			
		NP	P	NP	P	NP	P	NP	P		R-square	State	Sector	State x Sector	R-square	% Sbsd	% Infant	SA Care
Teachers	N	50	49	47	50	47	50	50	49	392								
	MEAN	55.7	43.4	33.0	25.8	70.9	37.3	49.5	26.5	42.6	0.17	10.92** CA,CT>NC,CO	32.63** NP>P	3.09* CT,NC NP>P	0.21	0.09	-0.21***	0.02
	STD	39.1	35.3	21.6	21.4	48.7	20.9	42.9	18.9	35.7								
Assistant Teachers	N	41	35	45	47	41	48	39	29	325								
	MEAN	42.3	21.2	23.2	11.5	45.9	23.3	31.1	8.9	26.2	0.19	8.78** CA,CT>CO,NC	42.99** NP>P	0.85	0.23	0.16**	-0.17**	0.05
	STD	33.2	18.2	29.6	12.2	41.0	17.9	29.1	6.8	28.6								
Teacher-directors	MEAN	89.3	49.7	57.6	50.4	115.5	66.7	48.0	46.4	63.6	0.13	4.73** CT>CO,NC	6.12** NP>P	1.70	0.20	-0.16*	-0.23**	-0.15
	STD	48.8	63.4	65.0	46.6	85.6	47.4	30.0	45.4	59.5								

***p< .001
**p< .01
*p< .05

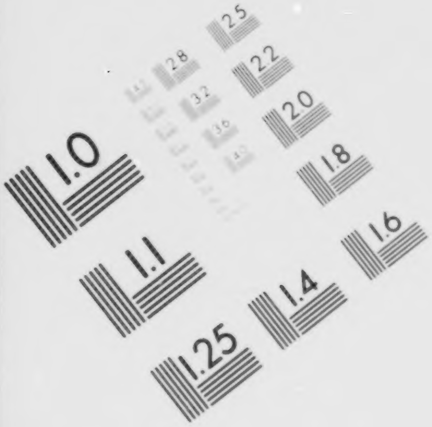
% SBSDY = % of enrollment that is subsidized
% Infant = % enrollment that is infant-toddler
SA Care = Care of School-aged children

Table 6.20

Months of Tenure Reported by Staff in Observed Classrooms

		MEANS BY STATE AND SECTOR									ANOVAS			
		CA		CO		CT		NC		TOTAL	F-tests			
		NP	P	NP	P	NP	P	NP	P		Age Group	State	Sector	State x Sector
INFANT-TODDLER CLASSROOM														
	N	11	16	14	34	16	28	31	38	188	Teachers			
Teachers	MEAN	39.6	25.7	27.6	21.0	58.2	37.0	37.0	31.3	33.2	9.08^{*}	6.34^{*}	9.69^{**}	2.29
	STD	49.0	24.8	23.0	28.7	60.4	35.1	47.4	33.5	38.9	Pr>IT	CA,CT>NC>CO	NP>P	
	N	9	12	14	26	18	26	25	18	148	Assistant Teachers			
Assistant Teachers	MEAN	7.2	8.8	5.2	6.5	8.3	6.9	6.9	6.4	7.0	5.75^{*}	8.36^{*}	14.35^{**}	0.19
	STD	16.7	8.1	9.0	12.1	42.9	31.0	27.8	42.7	29.0	Pr>IT	CA,CT>CO,NC	NP>P	
PRESCHOOL CLASSROOMS														
	N	78	72	59	44	53	43	63	45	457				
Teachers	MEAN	64.2	57.4	34.6	39.9	72.7	43.6	58.5	29.0	51.8				
	STD	60.6	71.5	33.6	50.8	65.8	34.2	71.3	29.9	58.1				
Assistant Teachers	N	53	29	43	35	44	32	42	16	294				
	MEAN	38.0	25.0	30.4	11.8	56.6	34.3	27.4	10.3	31.8				
	STD	44.1	26.5	59.4	25.3	57.3	29.3	31.0	16.6	43.0				

$^{***}p<.001$
$^{**}p<.01$
$^{*}p<.05$



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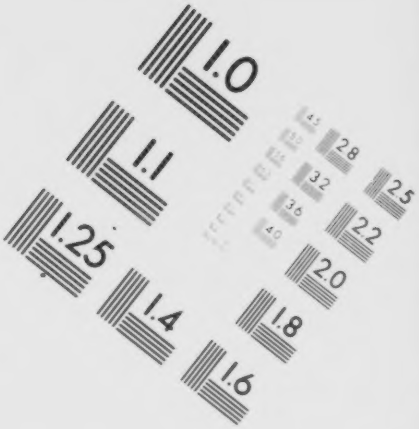

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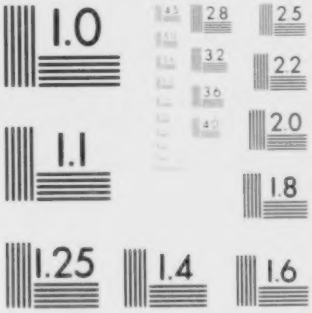
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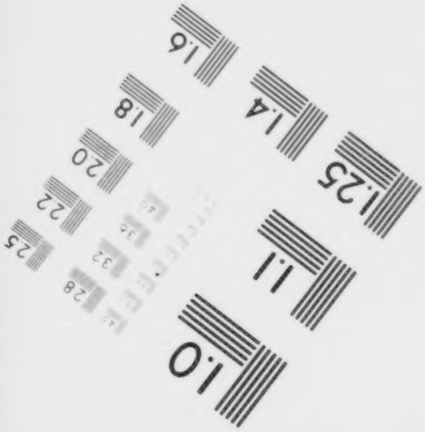

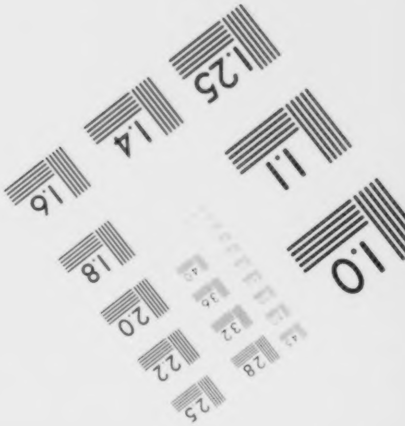

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Table 6.21

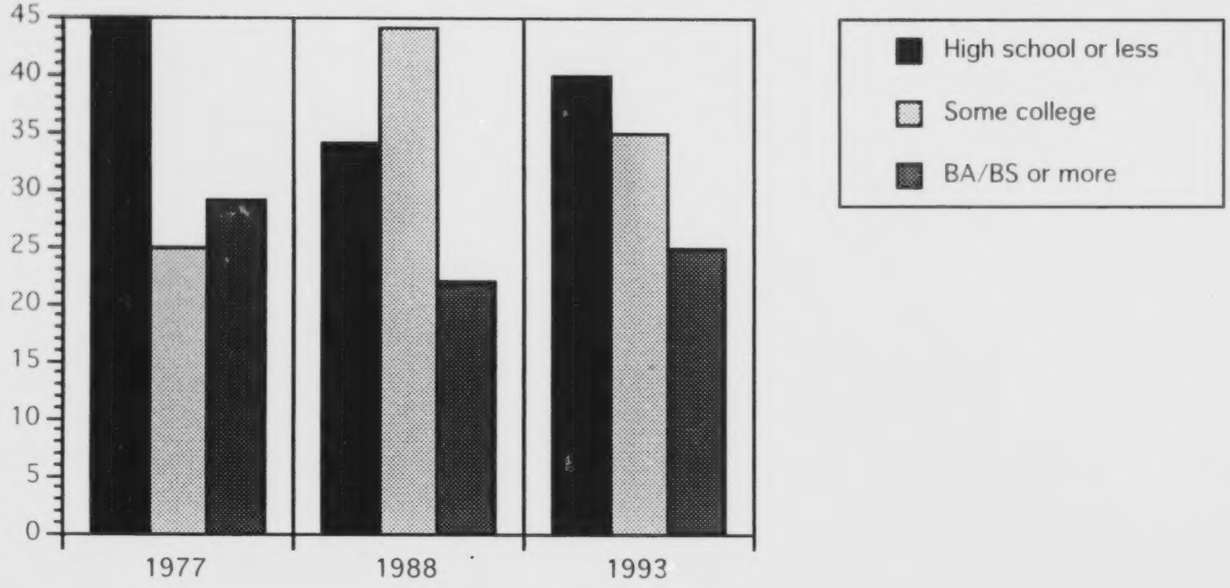
Associations Between Measures of Classroom Structure Simple Correlation Coefficients

Row No.	1	2	3	4	5	6	7	8	9	10
1. Average Midmorning Adult Child Ratio	1.00	-0.36**	0.03	-0.01	0.12*	-0.01	0.01	0.04	-0.03	0.04
2. Average Midmorning Group Size		1.00	0.10*	0.00	0.12*	0.06	-0.03	0.07	0.02	0.01
3. Teachers ECE Training			1.00	0.24**	0.73**	0.19**	0.14**	0.09	0.05	0.21**
4. Assistant Teachers ECE Training				1.00	0.12*	0.52*	0.09	0.30**	0.11*	0.13*
5. Teachers Formal Education					1.00	0.28**	0.19**	0.05	0.05	0.14**
6. Assistant Teachers Formal Education						1.00	-0.02	0.25**	0.09	-0.04
7. Teachers Prior Experience							1.00	0.22**	-0.03	-0.03
8. Assistant Teachers Prior Experience								1.00	-0.03	0.06
9. Teachers Tenure in Center									1.00	0.62**
10. Assistant teachers Tenure in Center										1.00

Note. Ratios and group sizes were observed by data collectors. ECE training, formal education, prior experience and tenure in center were reported in the Director's Interview.

***p<.001
**p<.01
*p<.05

Figure 6.1
Education level of teaching staff in three studies



Chapter 7

Reconceptualizing the Early Childhood Workforce

by CAROLLEE HOWES

INTRODUCTION

Within the field of early childhood teaching staff titles have been roughly defined by function. Teachers generally are responsible for the management of a classroom. Assistant teachers generally work under the direction of a teacher and teacher-directors are responsible both for classroom management and some amount of center administration. At the present time there are no consistent regulations describing the educational or other qualifications for each job title. Some states do not have any regulations. The regulations in states that do are not consistent nation-wide. Although some professional groups, including NAEYC, have proposed standardized qualifications for each teaching function, these have not been uniformly adopted. As can be seen from the data presented in Chapter 7, in our sample there was considerable variation in the qualifications of teaching staff with the same job title.

To further complicate this situation structural arrangements within a center can determine job title. For example, when teaching staff work alone, the person is defined as a teacher. However, when two or more staff work together, the second staff member may be called a teacher or an assistant teacher, depending on the staffing philosophy of the center rather than on the staff qualifications. Likewise, centers that use teacher-directors do so for a wide variety of reasons that may or may not be based on staff qualifications.

From a wider labor market perspective it is of interest to determine whether or not centers are drawing on the low wage or secondary labor market as they hire their teaching staff. See the discussion in Chapter 2. Although as can be seen in Chapter 5, assistant teachers appear to be closer to the definition of secondary labor market worker than do most teachers or teacher-directors there is, again, considerable overlap in the educational and training backgrounds of staff in all three job titles.

In order to clarify these issues we reconceptualized the staff in this study using three categories based on education and training in ECE. The first background category consists of staff who have a high school education or less and minimum or no training in ECE. These staff are most clearly members of the low wage or secondary labor market. The second background category consists of staff who have some college education. The third background category consists of staff who have a college degree or advanced training in ECE. We used information gathered from the directors on the background of a total of 4920 staff members to create these background categories.

RESULTS

BACKGROUND, ECE TRAINING AND EXPERIENCE: ALL STAFF

Table 7.1 presents the highest level of ECE training for the whole sample for each category. It is important to note that even in background category 1 almost three-quarters of the staff had some minimum ECE training, most often by attending workshops in the community. Within the second background category 89% of the staff had some ECE training, primarily college courses (65%). This suggests that staff may be going to college in order to get ECE courses. This is in contrast to the relatively small percentages within this background category who have either CDA or AA degrees. Within background 3 most staff (83%) had advanced training in ECE. This suggests that when staff with college degrees work in the field they are highly likely to have ECE training as opposed to specializing in an unrelated field.

As was expected, given the classification procedures, Table 7.2 shows that staff from background 3 had more formal education than staff from background 2 who in turn had more formal education than staff from background 1. It is interesting that the average number of years of formal education for staff in background 2 is equivalent to one year of college. This is further evidence that suggests that staff in background 2 have attended college by taking one or two ECE classes rather than general education classes.

Comparisons of prior experience in ECE and tenure in the center are also presented in Table 7.2. Staff in background category 3 had more prior experience and longer tenure in the center than staff in background 2 who in turn had more experience and longer tenure than staff in background 1.

Job Titles and Educational Background

In order to examine the "fit" between job title and background category, the crosstabulation of job title by background category is presented in Table 7.3. Examination of the table suggests an imperfect fit between job title and background category. Teachers and assistant teachers were equally likely to be classified in background category 2, although twice as many assistant teachers as teachers were classified in background 1 and only one-third as many assistant teachers were classified in background 3 as teachers. Teacher-directors and educational coordinators are often thought to have advanced training in ECE. However, only half of the teacher-directors and less than three-quarters of the educational coordinators were classified in background 3. Therefore, the background classification scheme tends to capture more information about teacher qualifications than job titles.

ECE TRAINING AND EXPERIENCE BY BACKGROUND: TEACHING STAFF

The remainder of this chapter is concerned with only teaching staff or job titles of teacher, assistant teacher and teacher-director. These are the staff that have daily direct contact with children. Table 7.4 presents the ECE training of teaching staff in the three background categories. The results are similar to those for the entire staff. Seventy-five percent of the teaching staff in background category 1 had some minimal ECE training, most in workshops. Almost all of the teaching staff in background category 2 had some ECE training, the majority in college courses. Eighty-one percent of the teaching staff in background category 3 had advanced training in ECE.

Education, experience and tenure of teaching staff in the three background categories are presented in Table 7.5. Again the results are comparable to those for the total staff. Most teaching staff in background category 2 had the equivalent of one year of college. Most teaching staff in background category 3 had the equivalent of BA/BS degrees. Teaching staff in background category 3 had more education, experience and tenure than teaching staff in background category 2 who had more education, experience and tenure than teaching staff in background category 3.

Following the general format of this report, associations between the newly constructed background categories and sector and state were examined. Table 7.6 presents associations between background categories and state. There was a significant association. In California teaching staff were disproportionately drawn from background 2 rather than 1 or 3. This may because California state regulations require units of

ECE training in the Community College for teaching staff of all categories. It is interesting that this regulation may have the paradoxical effect of decreasing the proportion of teaching staff drawn from background 3 relative to two other states, Connecticut which tends to have generally high regulations and Colorado which tends to have somewhat lower regulations. In both of these states teaching staff were approximately equally distributed across the three background categories. North Carolina had proportionally fewer teaching staff in background category 3. This is consistent with the low requirements for ECE training in North Carolina.

Associations between sector and background of teaching staff are in Table 7.7. There was a significant association. For-profit centers tended to use more teaching staff from background 1 and fewer teaching staff from background 3 than nonprofit centers.

Differences in Wages and Foregone Earnings

Hourly wages and annual foregone earnings were compared for teaching staff of different background categories working in centers of different sectors. Annual foregone earnings as discussed in chapter 5 are the difference between the wages actually received and the wages paid in the civilian labor force with identical years of education, age, gender and minority status. These comparisons are presented in Table 7.8. For wages and foregone earnings, there were significant main effects for both background category and the interaction between background category and sector. (Sector results are not reported because they are identical to those presented in chapter 5). In both for-profit and nonprofit centers teaching staff in background category 3 had higher hourly wages than teaching staff in background category 2 who in turn had higher wages than teaching staff in background category 1. However, the wage differential for background category 3 was greater in nonprofit centers. In both for-profit and nonprofit centers, teaching staff in background category 2 earned on the average about $1.00 per hour more than teaching staff in background category one. In for-profit centers, teaching staff in background category 3 earned only $.76 per hour more than teaching staff in background category 2, while in nonprofit centers the wage differential was almost three times higher, $2.25 per hour. Therefore nonprofit centers were willing to pay much more for teaching staff with college degrees and advanced ECE training. The annual foregone earnings follow a similar pattern with teaching staff in background category 3 giving up more foregone annual wages, $10,073, if they worked in a for-profit center.

Differences in Process Quality

Finally the issue of differences in process quality in classrooms with teaching staff of different background categories was explored. Staff reports of their qualifications from the Staff Questionnaires were used to categorize the teacher in each classroom of the study. If the classroom had an assistant teacher rather than a teacher the assistant teacher was substituted. If a classroom had a teacher and an assistant teacher only the teacher was used. The background categories were identical to those used earlier in the chapter to classify staff using director reports.

Table 7.9 presents comparisons for process quality among classrooms with teachers classified into the three categories. Classrooms with teachers of background 3 were higher in process quality than classrooms with teachers of background 2 which were higher in process quality than classrooms with teachers of background 1. The components of the process quality index are also presented in Table 7.9. In all cases classrooms with teachers of background 3 had higher quality than classrooms with teachers of backgrounds 2 and 1. Classrooms with teachers from background 2 had higher in sensitivity and ECERS scores than classrooms with teachers from background 1. However, in terms of responsive involvement and ITERS scores, classrooms with teachers from background 2 were no different than classrooms with teachers from background 1.

SUMMARY

- The reconceptualized background categories appear to summarize teacher qualifications better than job titles.

- Teaching staff from background category 3 provided the highest quality care.

- For-profit centers hire fewer teaching staff from background category 3 and are less likely to reward teaching staff with college degrees and advanced ECE training with higher wages.

- On average, staff with college degrees are underpaid proportionately more than staff with less education.

- California and North Carolina centers are less likely to hire teaching staff from background 3 than the other two states.

Chapter 7 Appendix

Tables

Table 7.1 Highest ECE Training of Total Staff in Three Background Categories

Table 7.2 Education, Experience and Tenure of Total Staff in Three Background Categories

Table 7.3 Comparisons of Job Titles by Background Categories

Table 7.4 Percentage of Teaching Staff with Background 1, 2, & 3 by Highest Level of ECE Training Achieved

Table 7.5 Education, Experience and Tenure of Teaching Staff in Three Background Categories

Table 7.6 Number of Teaching Staff with Background Levels 1, 2, & 3 by State

Table 7.7 Number of Teaching Staff with Background Levels 1, 2, & 3 by Profit Sector

Table 7.8 Wages of Teaching Staff by Background in For-profit and Nonprofit Centers

Table 7.9 Process Quality in Classrooms with Teaching Staff of different Backgrounds

Table 7.1

Highest ECE Training of Total Staff in Three Background Categories

Level of ECE Training	Background 1: High School or Less		Background 2: Some College		Background 3: College Degree	
	N	Percent of Total	N	Percent of Total	N	Percent of Total
Number of Staff	1267	26%	2136	43%	1517	31%
HIGHEST LEVEL OF ECE TRAINING						
No Training	**328**	**26**	**53**	**3**	**43**	**3**
Minimum Training	**939**	**74**	**175**	**8**	**73**	**5**
In-service	138	11				
Workshops	613	48				
High School Courses	188	15				
Some Training			**1908**	**89**	**144**	**9**
CDA			78	4	5	0
College Courses			1398	65	139	9
AA Degree			432	20		
Advanced Training					**1258**	**83**
RN Degree					22	2
BA/BS in Child Field					843	55
Graduate Courses					203	13
Graduate Degree in Child Field					190	13

Table 7.2

Education, Experience and Tenure of Total Staff in Three Background Categories

		Background 1	Background 2	Background 3	F-test for Differences/Scheffe
Number Years Formal Education	MEAN	11.8	13.3	16.4	8166.96*** 3>2>1
	STD	0.7	1.0	1.1	
	RANGE	2-12	13-15	15-28	
Years Prior Experience	MEAN	1.0	3.0	5.6	189.75*** 3>2>1
	STD	4.0	4.3	6.5	
	RANGE	0-35	0-30	0-47	
Months of Tenure in the Center	MEAN	33.6	38.5	47.2	25.0*** 3>2>1
	STD	47.5	49.7	58.0	
	RANGE	0-336	0-576	0-390	

***p<.001
**p<.01
*p<.05

Table 7.3

Comparisons of Job Titles by Background Categories

	Background 1		Background 2		Background 3	
	N	Percent of Total Staff in Job Class	N	Percent of Total Staff in Job Class	N	Percent of Total Staff in Job Class
TEACHING STAFF						
Teacher	494	20%	1181	47%	832	33%
Assistant Teacher	696	43	725	45	206	12
Teacher Director	15	7	82	40	110	53
ADMINISTRATION STAFF						
Administrative Director	10	4	70	27	176	69
Educational Coordinator	1	5	5	24	15	71
Specialist	45	27	41	25	78	48
Owner Director	6	4	32	23	100	73

Table 7.4

Percentage of Teaching Staff with Background 1, 2, & 3 by Highest Level of ECE Training Achieved

Level of ECE Training	Background 1: High School or Less		Background 2: Some College		Background 3: College Degree	
	N	Percent of Total	N	Percent of Total	N	Percent of Total
Number Teaching Staff	1205	28%	1988	46%	1148	26%
HIGHEST LEVEL OF ECE TRAINING						
No Training	**297**	**25**	**46**	**2**	**34**	**5**
Minimum Training	**908**	**75**	**168**	**5**	**63**	**5**
In-service	135	11				
Workshops	591	49				
High School Courses	182	15				
Some Training			**1774**	**93**	**127**	**11**
CDA			75	4	5	0
College Courses			1311	68	122	11
AA Degree			388	20		
Advanced Training					**924**	**81**
RN Degree					11	1
BA/BS in Child Field					686	60
Graduate Courses					134	12
Graduate Degree in Child Field					93	8

Table 7.5

Education, Experience and Tenure of Teaching Staff in Three Background Categories

		Background 1	Background 2	Background 3	F-test for Differences/Scheffe
Number Years Formal Education	MEAN	11.8	13.3	16.2	7123.55***
	STD	0.7	1.0	0.9	3>2>1
	RANGE	2-12	13-15	15-20	
Years Prior Experience	MEAN	2.0	2.8	4.7	103.17***
	STD	3.9	4.1	5.8	3>2>1
	RANGE	0-35	0-30	0-47	
Months of Tenure in the Center	MEAN	31.6	35.6	38.4	6.41**
	STD	44.4	45.6	49.9	3>2>1
	RANGE	0-336	0-576	0-343	

***p<.001
**p<.01
*p<.05

Table 7.6

Number of Teaching Staff with Background Levels 1, 2, & 3 by State

Chi Sq. (6) = 418.08 p = .001

	Background 1		Background 2		Background 3	
	N	Percent of Total	N	Percent of Total	N	Percent of Total
California	120	11%	790	67%	234	22%
Colorado	370	31	436	36	393	33
Connecticut	237	26	353	39	311	35
North Carolina	478	41	470	41	210	18

Table 7.7

Number of Teaching Staff with Background Levels 1, 2, & 3 by Profit Sector

Chi Sq. (6) = 418.08 p = .001

	Background 1		Background 2		Background 3	
	N	Percent of Total	N	Percent of Total	N	Percent of Total
For-profit Centers	672	31%	996	45%	528	24%
Nonprofit Centers	533	25	992	46	620	29

Table 7.8

Wages of Teaching Staff by Background in For-profit and Nonprofit Centers

		Background 1		Background 2		Background 3		F-tests	
		For-profit	Nonprofit	For-profit	Nonprofit	For-profit	Nonprofit	Background	Background by Sector
Wage per Hour	MEAN STD	$5.23 1.03	$5.48 1.16	$6.31 3.55	$6.42 1.92	$7.07 3.38	$8.67 4.18	191.39*** 3>2>1	21.83*** NP: more diff betw 2 & 3
Annual Foregone Wages	MEAN STD	$2,981 2,357	$2,654 2,456	$4,334 3,181	$3,843 3,232	$10,084 6,045	$7,973 7,971	596.3*** 3>2>1	13.83*** P: more diff betw 2 & 3

Table 7.9

Process Quality in Classrooms with Teaching Staff of Different Backgrounds

		Background 1	Background 2	Background 3	F-test
Process Quality Index	MEAN STD	3.6 0.9	4.0 0.9	4.2 0.9	11.64** 3>2>1
Percent Responsive	MEAN STD	0.3 0.3	0.3 0.3	0.4 0.3	3.59** 3>2,1
Sensitive	MEAN STD	2.4 0.8	2.7 0.7	2.8 0.7	3.89** 3>2>1
ITERS	MEAN STD	3.2 1.0	3.3 0.9	3.6 1.2	3.61* 3>2,1
ECERS	MEAN STD	3.7 0.8	4.3 1.0	4.4 1.0	8.51** 3>2>1

***p<.001
**p<.01
*p<.05

Chapter 8

Cost, Revenues and Subsidies: A Descriptive Analysis

by JOHN R. MORRIS, SUZANNE W. HELBURN, MARY L. CULKIN

OVERVIEW

This chapter reports on costs, revenues, subsidies, fees, and profits of early care and education (ECE) centers and how they differed across states, by profit status, percent of children subsidized, percent infánt/toddlers, and presence of a schoolage program. Data were collected primarily by interviews with center directors or owner-operators, and from annual reports where available. The chapter discusses center costs, in-kind donations, revenues and profits, cash subsidies, fees, and how they combine into a total picture of how center-based ECE is paid for in the US.

As might be expected, some directors had difficulty identifying some specific costs, particularly those that they did not pay directly or at all. Donated space, insurance, and other donated services presented the most difficulties. Problems of specification and their solutions are discussed below in conjunction with particular cost, revenue, and subsidy categories.

Most of the analysis in this chapter follows the same procedures used in other descriptive chapters of this report. Each category of cost, revenue, subsidy, or fees was tested for statistically significant differences among states, profit status, interactions between state and profit status, the proportion of children served that were subsidized, the proportion of infants, and the presence of a school age program. Those variables that showed some significant differences are reported. The detailed tables in each section show costs, revenues, subsidies, or fees per child hour of care. In the cost section, a simplified budget is reported consisting of the average costs and revenues per month per-child by major category for all centers and in for-profit and nonprofit centers.[1]

Some of the data in this chapter differ among states because of either different labor markets producing different wage rates, or different costs of living. Unless specified the data have not been corrected for such differences. When they are corrected as a supplemental analysis, data are deflated by either the relative wage rates in the state for people with similar backgrounds, or the cost of living in the state. The deflators are discussed in chapter 5 and shown in Table 5.2. The low wage multiplier in Connecticut suggests that there is an unusually high difference between wages in relatively low paid jobs and higher paid jobs in that state.

RESULTS

EXPENDED COSTS

Table 8.1 shows the *expended costs*, the cash costs incurred by the center, to produce ECE. Mean expended cost per child averaged just over $400 per month, $420 in nonprofit and $386 in for-profit centers. The 9% differential in total expended costs per child hour between nonprofit and for-profit centers overall was not statistically significant.

The distribution of costs was different between the two sectors, with labor taking 79% of expended cost in nonprofits but only 62% in for-profits. Food was also higher, in both absolute and percentage terms, in nonprofit than in for-profit centers. All other costs were higher in for-profit centers. To some extent, these differences reflect the donations received by nonprofit centers that reduced their occupancy and other cash operating costs, leaving more for labor.

Table 8.2 shows the mean expended cost per child hour of care for the whole sample and within states by profit sector. Expended cost averaged $2.09 per hour. It was significantly higher in Connecticut at $2.88 and significantly lower in North Carolina at $1.39. California and Colorado were both close to the average at $2.04 and $2.02 respectively. Nonprofit centers were significantly more expensive than for-profit centers in Connecticut only. Centers that served a higher percentage of subsidized children were more expensive. The programs for subsidized children had higher expended cost, $.59 per child hour more expensive than nonsubsidized. Similarly, a shift to infant/toddler care increased expended cost significantly, $.78 per child hour.

Labor Costs

Labor costs, consisting of wages and nonwage benefits (along with two small items of education for staff and the costs of subcontractors), were the largest part of cost, amounting to 70% of expended cost for the entire sample. Nonwage benefits were defined to include the employer's share of social security, unemployment insurance, worker's compensation, health, life and disability insurance, retirement, and other related items. Nonwage benefits excluded discounts for staff on ECE. The estimation of nonwage benefits was a problem for data collectors as directors had difficulty isolating specific benefits data. Some centers paid unemployment insurance, worker's compensation, and health insurance as part of a single insurance package that included facility liability insurance. To estimate specific nonwage benefit costs in those cases, a portion of the total insurance bill equal to 3% of total wages was transferred from insurance to nonwage benefits to cover unemployment and worker's compensation. If health insurance was provided, another 5% was transferred providing the insurance estimate was large enough to allow the transfer. Both of these figures were based on a review of national average costs for all employees (*Statistical Abstract of the U. S.*, 1993, p. 430).

Connecticut was the highest labor cost state at $2.23 per child hour and North Carolina the lowest at $0.94. California at $1.42 and Colorado at $1.31 were in the middle. Adjusting for labor market differences between the states compressed these costs somewhat. The market adjusted labor costs in Connecticut were $2.14, California $1.22, Colorado $1.31 and North Carolina $1.11. The change, in addition to compressing the range of costs was to drop California below Colorado in labor cost per child hour. Nonprofits had higher labor costs than for-profits by $.48 per child hour (39% of for-profit labor cost), and these differences were significant at the 0.1% level. As noted above, the definition of nonwage benefits excludes staff discounts on ECE (which would equalize labor costs somewhat) because they were treated as a reduction in revenue rather than as a cost.

Both wages and nonwage benefits were higher in nonprofit than in for-profit centers. The difference in nonwage benefits between nonprofits and for-profits was significantly greater in Connecticut than in the other three states.

Most centers identified some costs for the education of staff members, but the amounts were small, an average of just one cent per child hour. Centers in Connecticut and Colorado showed significantly higher costs than centers in California and North Carolina, although the amounts were so small that they were lost in rounding.

In addition to higher labor cost for staff, the nonprofit centers also showed higher costs for subcontractors, suggesting that nonprofits were likely to provide some services using nonstaff members that for-profits either did not provide or provided in-house.

The scope of services in the center affected labor costs. Centers with a higher percentage of subsidized children had substantially greater wages and benefits. Centers with more infant/toddler care had an even greater increase, reflecting the higher ratios of staff to children in these centers. Presence of a school age program reduced wages and benefits per child hour. Staff education expenses increased with the percentage of infant/toddlers. Subcontractor costs - services provided by persons not on the regular staff (often including special lessons, accounting and the like) - increased with higher numbers of subsidized children further intensifying the amount of labor related services committed to these children.

Occupancy Costs

For-profit sector *occupancy costs* were higher than nonprofit costs. These costs included rent or mortgage payment, utilities, maintenance, and repair. The costs identified here excluded any donated space or services which are described in the section on subsidies. The for-profit sector spent more than twice as much on occupancy cost as the nonprofit sector and the difference raised for-profit sector costs by $.24 per child hour relative to nonprofits, offsetting half of the for-profit sector's labor cost advantage. North Carolina occupancy costs were significantly lower than the other three states.

There appeared to be a trade-off here between the two major categories of cost. For-profit centers were choosing to spend their budgets on better quality space while nonprofits were spending theirs on more or better staff. One might expect this as a result of donations to nonprofits in the form of space which then freed up funds for spending on labor. Even when space donations were included in occupancy costs at our estimate of their value (see subsidies section), however, for-profits still used more costly facilities than nonprofits. One or more of the following explanations could account for this choice. Nonprofits may be constrained by the particular space that is donated to them and unable to improve that space to be equivalent to for-profit center space. Alternatively, for-profits may see space as a more effective marketing tool than better qualified staff per dollar spent on either, and therefore choose to spend their budgets in this direction. A third possible reason that for-profits spent more on facilities is that the higher quality could lead to a higher resale value either immediately with a lease back arrangement or when the center is eventually sold. Nonprofits may not have the same perspective on resale of the building. Whatever their reason, having made the choice to use better facilities, for-profits must then conserve on labor costs to stay competitive.

A caveat must be included on occupancy costs. If the center owns its building and is planning on resale of the building at some future date, then that sale might recoup some or all of the depreciation charged as a cost of occupying the facility. If so, then the ultimate cost of occupancy could be overstated by whatever will be recouped. Our data on occupancy were for cash costs which would not explicitly include depreciation, but did include principal payments on mortgages (which may be similar to depreciation in amount). If the building lost value, then occupancy costs might be understated, whereas if the building held or gained value, occupancy cost might be overstated.

Food Costs

Food costs were one-fourth lower in Connecticut ($.09 per child hour) and California (.07) than in Colorado ($.11) and North Carolina ($.12), an odd reversal of anticipated costs. Nonprofit centers had higher food costs than for-profit centers. The difference in food costs between nonprofit and for-profit centers was higher in North Carolina than in the other states. Serving more subsidized children significantly raised food costs, but neither more infant/toddlers nor school-aged children did so. Possibly more meals are served to children in centers with more subsidized children and the higher frequency of subsidized children in nonprofit centers may help explain the higher costs in those centers.

Insurance Costs

Insurance costs per child hour were higher in Connecticut than in the other states and lower in North Carolina. They were higher in for-profit than nonprofit centers, although part of the difference was accounted for by donated insurance in nonprofits. These differences were highly significant, large in percentage terms, but small in absolute terms. The largest costs were $.05 per child hour in California for-profit centers and in Connecticut for-profit and nonprofit centers. There is no way of telling whether these differences reflected differences in coverage, prices from state to state, or individual insurance damage experience. Higher percentages of subsidized children were significantly associated with higher insurance costs, but neither infant/toddlers nor school-aged children were.

Other Operating Costs

Directors were asked to identify their *other operating costs* with the help of the following list of categories: office supplies, children's program supplies, maintenance supplies, equipment rental and maintenance, nondepreciated equipment, depreciation on equipment, transportation and travel, telephone, postage, marketing, advertising, public relations, photocopying, printing, publications, licensing and fees, dues and subscriptions, interest payments and bank service charges, and other. Where the identified costs appeared to duplicate other costs already identified (usually building costs), the costs were corrected. Donated supplies were excluded from costs.

Other operating costs were highest in Connecticut and Colorado and lowest in California and North Carolina. For-profit centers averaged higher operating costs than nonprofit centers in all states except North Carolina. Colorado for-profit centers averaged the highest operating cost at $.25 per child hour while California nonprofits were lowest at $.12. Other operating costs did not appear to be related to subsidized children, infant/toddlers, or school-aged children.

Overhead Costs

Overhead costs were the fees paid by a center to a central administration for services provided, such as common advertising or accounting for a system of centers. The services varied as did the means of determining the payment. Some national systems of centers did not account for these costs at the center level and they had to be estimated with help from the firm's comptroller or accountant. Overhead, which largely reflected whether the center was a member of a system or not, was highest in Colorado, but the absolute amounts were small and the differences insignificant.

A supplemental analysis was performed on the 165 centers that had some overhead. In those centers, the average level of overhead was three times as high as in all centers combined, but the amounts were still small relative to expended costs (under three percent). Differences in overhead were not significant across states or profit sectors for centers with overhead. Those centers that did have overhead appeared to have significantly lower wage and nonwage benefits than other centers, but the difference resulted from a higher frequency of centers with overhead in the lower cost states of Colorado and North Carolina and disappeared when state and sector were held constant.

Summary

Overall, the picture is that nonprofit centers seemed to use more labor and food in providing ECE while for-profit centers allocated more to building cost and other items. Adding subsidized children and programs for them increased costs per hour in wages, fringe benefits, subcontractor costs, insurance, and food. Adding infant/toddlers and the programs for them increased costs per hour in wages, but not much in other areas. Adding school-aged children lowered cost per hour, but not significantly. Centers with overhead did not appear to have significantly different costs than others.

REVENUES AND PROFITS

Revenues for all centers and by state and sector are tabulated in Table 8.3. Total revenue for all centers averaged $2.17 per child hour over all ages. Total revenue was significantly higher in Connecticut than in other states and significantly lower in North Carolina. Connecticut averaged almost twice as much revenue per child hour as North Carolina. Nonprofit centers in Connecticut, and centers with more infant/toddlers or subsidized children received significantly more revenue per child hour than others. Total revenue per child hour did not differ significantly with the presence of a school-aged program.

Parent Fees

Sources of revenue differed significantly by type of center. For-profit centers generated almost 90% of their revenue from parent fees, while nonprofits received only 56% from that source. Overall the average parental payment per child hour was $1.56, but in for-profit centers it was $1.84 (equal to $83 for a 45 hour week). It should be noted that these differences represented differences in the fraction of parents paying full fees more than differences in the level of fees. All of the figures in this section are based on the total revenues to the center and hence are the average of full pay and subsidized children. Parent fees per child hour were significantly higher in Connecticut at $2.06 than in other states, and lower in North Carolina at $1.01. Revenues from parent fees were significantly lower per child hour in centers with more subsidized children reflecting substitution of public fees for parent fees. Revenues were higher in centers with more infant/toddlers reflecting higher fee levels.

Public Fees and USDA Grants

Public fees, mostly state fees for the care of poor children, and USDA funds from the Child and Adult Care Food Program were distributed in nearly a reverse pattern from parent fees. Some centers said they had subsidized children, but did not separate public fees from parent fees. In those cases, estimated fees for the number of subsidized children were transferred from the parent fee line to the public fee line.

Nonprofit centers received more than twice as much in public fees per child hour as for-profit centers, reflecting their higher percentage of subsidized children. The differences among the states were insignificant, but the gap in public fee revenues between nonprofit and for-profit centers was greater in Connecticut and California than in Colorado and North Carolina. Of particular note, for-profit centers in California received only $.05 per child hour in public funds, (one-seventh of the overall average) while California nonprofit centers received $.57 per child hour. In Colorado and North Carolina, by contrast, nonprofit centers received less than $.05 more per hour in public reimbursement fees than for-profit centers.

Not all of the difference in public fees reflected differences in percentage of subsidized enrollment. In Colorado, nonprofit centers appeared to be receiving less money per subsidized child than for-profits, a difference that did not appear elsewhere. Public fees per subsidized child were substantially higher in California and Connecticut than in Colorado and North Carolina.

Nonprofit centers received five times the average USDA food reimbursement of for-profits. Colorado and North Carolina averaged more reimbursement than California and Connecticut. The reimbursement revenue increased with the percent of subsidized children.

Other Public Funds

Other public funds not directly paying for services for a particular child went even more lopsidedly to nonprofit centers. In no state did for-profit centers average even one-half cent per child hour, while nonprofits in two states averaged over $.30 per child hour. Other public funds went to centers with more subsidized children, but age of child made no significant difference.

Sponsor Funds and Other Private Contributions

Sponsor (usually a corporate sponsor) funds, other private contributions, and other revenues were all larger in nonprofit centers than for-profit centers, by a 6 to 1 margin overall. Connecticut centers received much more from sponsors than other states. In Connecticut, those sponsor contributions were concentrated in just a few centers. Other sources of private funds increased, but sponsor contributions decreased, with increases in subsidized children, infant/toddlers or school-aged children. In the aggregate, these types of funds averaged less than 1% of total revenue in for-profit centers outside of Connecticut, 5-10% in nonprofit centers outside of Connecticut, and 12% of the total in Connecticut nonprofit centers.

Profits or Surpluses

On average, revenues exceeded costs by $.08 per child hour, or about 4% of cost. As center directors generally could not specify how much had been invested in their businesses, it was impossible to estimate rates of return on capital. The variation in surplus within each group of centers was very high (the standard deviation was four times as large as the mean), and hence, the differences between states, profit status, subsidized children, and school-aged children were insignificant. Only the percent of infant/toddlers showed up as affecting surpluses significantly. Centers with more infant/toddlers were, on average, less profitable (or had lower surpluses). Possibly the largest surprise here is that surplus in nonprofit centers on average was not significantly different from that in for-profit centers.

Summary

The overall revenue picture shows that nonprofit centers had a much more diversified revenue stream than for-profit centers producing a somewhat greater total revenue per child hour. Connecticut generated more parental and nonparental fees in its centers than other states. California for-profit centers were the most dependent on parental fees with only 3% of their revenue coming from all other sources combined. Profit status did not affect profit level significantly.

SUBSIDIES AND THE FULL COST OF CARE

Subsidies are defined in this study as anything that reduced the cost of providing care to children or that allowed children whose parents could not otherwise afford care to attend a particular center. The first group, things that reduce the cost of providing care in general, may be thought of as *supply subsidies*. The availability of these subsidies will tend to increase the amount of care in the market and to reduce the price quoted for care. The second group, things that allow individual children who could not otherwise afford ECE to do so, may be thought of as *demand subsidies*. These subsidies will also increase the amount of care in the market, but, in addition, will tend to increase the prices for care.

Supply subsidies include in-kind donations of goods and volunteer services (not cash) given to centers free or at reduced prices. They were valued at the savings to the center, assuming that the center would have used the same resources even if it had to pay for them. Since the center might not have been willing or able to pay the full price for the donated item, this estimate of replacement value may exaggerate the value of donated goods and services. The particular case of donated or discounted labor illustrates this problem.

Volunteers might do things at a center that the center could not afford. Where the replacement value is the maximum value of a volunteer, the minimum value is the cost of supervision of the volunteer. Most centers, however, do not calculate an estimate of the cost of managing volunteers.

Supply subsidies also include the foregone earnings of employees who accept wages below the going market wage for their skill level. This valuation presents a similar measurement problem to goods donations. A person making $5 per hour less than she/he could earn in an alternate job is donating a part of her/his time to the center. In this case, the center probably incurs no extra cost to coordinate the volunteer portion of the person's labor, but might not hire her if the center had to pay the same rate as other businesses. From the employee's point of view, the act may be a donation to improving the quality of care for children, or may not be, as the lower pay could result from differential working conditions (safety, easy commute, "joy") that attract workers even for low pay. The lower pay could also be mere illusion as the statistical basis for estimating the pay differential is the pay of people with similar backgrounds, and that average might not apply to the particular workers in child care. The issue was discussed in Chapter 2 above.

Volunteers

The subsidy provided by *volunteers* was measured by the director's estimate of what it would cost to hire similar skills in the market. On average, the value of volunteer time was $.04 per child hour or about 2% of expended cost. It was significantly higher in nonprofit centers where it averaged $.06, but differences among states were insignificant. The value of volunteers was higher in centers with more subsidized children, but did not differ according to the percent of infant/toddlers or presence of school-aged children.

Occupancy

Occupancy subsidies were measured as the estimated market value of the space occupied by the center minus what the center actually paid if the center director said that they received a subsidy or discount. Where the director could estimate the value of the subsidy and that value was consistent with other values in the area, that value was used. Where the director could not reasonably estimate the value, real estate agents in the area were contacted and asked about values per square foot. The properties were classified as to quality from answers to questions in the Director Interview. If the property had no direct alternative use, as might be the case for a church building in a residential zone, the value was based on similar property in a commercial zone nearby. The goal was to estimate what their costs would have been without donated space. On the advice of the realtors, older church properties were generally compared to lower quality strip shopping centers. To this value of space, was added the value of donated utilities and donated building services as identified by the director.

Occupancy subsidies are described in Table 8.4. Overall, the average occupancy subsidy was $.14 per child hour, about 7% of expended cost. Almost no occupancy donations were received by for-profit centers in three states ($.01 per child hour), but in Connecticut the donations in for-profit centers ($.20 per child hour) were similar in magnitude to nonprofit centers in the other states ($.14 to $.21 per child hour). Connecticut nonprofit centers received occupancy donations ($.38 per child hour) twice as high as in other states or as in for-profit centers in Connecticut. These differences were highly significant. The higher occupancy donations in nonprofit centers offset two-thirds of the difference between nonprofits and for-profits in occupancy costs. Despite their discounts or outright gifts of space, nonprofit centers apparently did not use as high-value space as for-profit centers. Occupancy donations were larger for centers with more infant/toddlers in care, but were not significantly greater for centers with more subsidized children.

Other In-kind Donations

Other in-kind donations consisted of donated insurance, equipment, food, and supplies and were measured by the director's estimate of value. The total value of these donations averaged $.02 per child hour, about 1% of expended cost. Again, centers in Connecticut had significantly greater contributions, as did nonprofit centers. Donations were also greater in infant/toddler centers.

Total In-kind Donations

Altogether, these in-kind donations were only 10% of expended cost and they tended to go to the higher cost centers. They were concentrated in the nonprofit sector ($.30 per child hour vs $.09 in the for-profit sector) and in Connecticut ($0.37 versus $0.17 in California, the second highest state). Total donations increased with the proportion of subsidized children and infant/toddlers. As a result, addition of in-kind donations did not change the ranking of expended costs among different types of centers very much, and the differences between states were unaffected by including donations. As anticipated, nonprofit centers became relatively more expensive when in-kind donations were added to costs.

Foregone earnings

Foregone earnings are the difference between wages and benefits actually received in child care jobs and the wages and benefits received by workers with similar backgrounds in the economy as a whole. These were discussed in Chapter 5 for workers, and are estimated in this section per child hour. The cost saving from foregone earnings averaged $.54 per child hour over the entire sample, about 25% of the total cash cost. That is, raising wages and benefits to the same level as the average person of the same age, education, gender and minority status earns in the same states, would raise ECE cash costs by about 25%. The saving or subsidy was greatest in Colorado, and least in North Carolina. The larger the percentage of subsidized children the lower the foregone earnings.

Table 8.4 shows two additional items related to foregone wages and benefits. The Fringe benefit ratio shows the average ratio of fringe benefits to wages for child care staff. Once the value of discounts on child care was added to the other benefits, the ratios were similar to those for the economy as a whole (21%) (Statistical Abstract of the U. S. 1994, p. 427). Fringe benefits were significantly higher in Connecticut than in California and North Carolina.

The last line of Table 8.4 shows the ratio of wages and benefits in the market place to the wages and benefits in child care. The average 1.45 ratio means that it would take a 45% raise to bring the average child care worker to the same level of pay as other workers with the same gender, education, age, and minority status. The needed raises would be highest in Colorado, and lowest in Connecticut. They would be higher in for-profit than in nonprofit centers and higher in centers with fewer subsidized children.

Full Cost of Care

The sum of expended costs, in-kind donations and foregone earnings, has been defined as the *full-cost of child care*. In this sample the full cost averaged $2.81 per child hour, 34% more than the expended cost without counting the subsidies. Full cost per child hour was higher in Connecticut than in the other three states and lower in North Carolina. The difference between for-profit and nonprofit centers was highly significant. Full cost was higher in centers with higher percentages of subsidized children and infant/toddlers.

It is reasonable to deflate the full cost of care either by the cost of living in these states to compare it with the cost of other products in the parents' budgets, or by wage rates to relate costs to the job market. Deflating by the cost of living compressed the differences in full cost substantially. Connecticut remained the most expensive state, but full cost dropped from $3.76 per child hour to $2.79. California's average full cost deflated from $2.75 to $2.21. Colorado full cost remained at $2.80, virtually the same as the deflated cost in Connecticut. North Carolina averaged $2.07, within 10% of California's average.

Deflating by wage rates, to eliminate differences in costs produced by different regional labor markets, painted a just slightly different picture. Connecticut costs deflated only to $3.61, remaining highest by far. Colorado was second highest in deflated full cost at $2.80. California deflated to $2.37 and North Carolina inflated to $2.21, again close to the California level.

Summary

Most forms of supply subsidy were, as expected, larger in nonprofit than for-profit centers. Foregone wages and benefits, however, were either similar between the sectors, or larger in for-profit centers. Larger subsidies were found in Connecticut than in other states, again except for foregone wages which were largest in Colorado and smallest in Connecticut. Full Cost was largest in Connecticut and in nonprofit centers. Subsidies tended to increase with additional subsidized children and infants, but foregone wages decreased with additional subsidized children.

FEES AND FEE POLICIES

Parent Fees

The standard monthly fees charged by age group were collected for all centers and are shown in Tables 8.5. The fees tended to be lower for older children. The mean full time monthly fees were $454 for infants, $433 for toddlers, $400 for older toddlers, $372 for preschoolers, and $235 for schoolage children (who averaged a shorter day).

Parent fees and the availability of service differed by children's age, state, and profit Sector. Although nearly all centers in each state served preschool aged children, only 44% served infants and 59% served school-aged children. In California, less than one-fifth of for-profit centers and one-third of nonprofit centers served infants, In Colorado the proportion serving infants was 32% and in Connecticut 48%. In North Carolina, 60% of nonprofit and 90% of all for-profit centers served infants. California, and Colorado centers were somewhat more likely to serve school-aged children than infants, but centers in Connecticut and North Carolina were not. At all ages, for-profit centers charged between $19 and $39 more per month for a full time child on average and that difference was significant except in the case of infants.

Fees by state were also significantly different with Connecticut most expensive, followed in order, by California, Colorado and North Carolina. Average fees in North Carolina, for infants, were $170 per month lower than in the second cheapest state (Colorado). For preschoolers, that difference was $106.

In California, fees for school-aged children were about 15% less than rates for preschool children, but in all three other states, they were nearer to 40% less.

As with previous comparisons, fees can be deflated for differences in price levels. The relevant comparison here is the cost to the parent of child care relative to other purchases. Fees for infants after deflating by the cost of living were $467 in Connecticut, $435 in California, $469 in Colorado and $294 in North Carolina. Relative to other prices in the state, infant fees were virtually the same in three states, but cheaper in North Carolina.

For preschoolers, deflated fees were $362 in Connecticut, $311 in California, $347 in Colorado and $261 in North Carolina. Again, North Carolina was the low cost state even relative to other prices in the state, but California fees were lower than Connecticut or Colorado.

Centers with a larger percentage of subsidized children charged significantly lower fees to all age groups, except school-aged children.

Reimbursement Rates

Maximum reimbursement per child by the state for qualifying low-income children was reported by fewer than half of all centers, except for preschoolers. Some centers had to be removed from a comparison of parent fees with state reimbursement rates as they appeared to be charging for different services - either broader scope or longer days in their reimbursement rates. On average for the remaining centers, reimbursement was just over 90% of parent fees. Across states in absolute terms, Connecticut and California centers received significantly higher maximum reimbursements than those in Colorado and

North Carolina. Centers with a higher percent of subsidized children and more infant/toddlers received significantly higher reimbursements for toddlers and preschoolers, an interesting reversal of the case with parent fees.

Relative reimbursements told a different story. The ratio of reimbursement to fees charged to parents differed significantly across states with North Carolina highest, followed by California, Connecticut and Colorado in order. For most age groups, North Carolina reimbursement rates averaged 1% above the parent rates in the same centers; in California reimbursements averaged about 95% of parent fees; in Connecticut, 87% and in Colorado, 81%.

Combining the relative and absolute measures of reimbursement, suggests that California was willing to come close to matching a market cost that was relatively high. North Carolina did match a market cost of care that was quite low. Connecticut did not match the market, but still paid relatively high reimbursement. Colorado with lower market rates than all but North Carolina paid the smallest share of market rates in its reimbursements - a relatively rich state that paid reimbursement, equivalent to the poorest state in the study.

Fees for Extra Services

The percent of families paying extra fees for lunches, breakfasts, diapering, or lessons (Table 8.6) was low in all cases. Only lesson fees were paid extra by more than 10% of families in the average center. Most of the differences among fees were not significant, although for-profit centers did charge extra fees significantly more often than did nonprofits.

Fees for Part-Time Children

Centers were asked what percentage of their FTE enrollment was part-time and whether they charged more per hour for children who attended part-time. North Carolina centers served significantly fewer part-timers than other states. For-profit centers served a higher percentage of part-time children than nonprofit, although the differences were not large. Centers serving more subsidized children served significantly fewer part-time children and were significantly less likely to charge extra for part-time. Children attending part-time were charged higher fees per hour in 61% of the centers, with for-profit centers charging extra significantly more often. Only 18% of nonprofit centers in North Carolina reported higher charges for part-time children, significantly less than in other states or in for-profit centers.

Discounts

Center directors were asked whether they discounted fees to some children and, if so, to whom. Eighty-five percent of the 357 centers that answered the question reported discounts for multiple children in the same family and 78% gave discounts to staff members' children. Twenty four percent gave discounts to employees of certain businesses. Discounts were most common in Colorado and least common in Connecticut. The high incidence of discounts for particular groups in Colorado may be related to a higher incidence of national system centers in the Colorado sample. For-profit centers gave significantly more discounts than nonprofit. In each state, the differences in frequency of discounts, unrelated to the family income of the child, between for-profit and nonprofit centers averaged about 20 percentage points. The offering of most types of discounts was not significantly related to program scope, except that discounts to staff members were less frequent in centers with subsidized children and discounts were more frequent in centers with school-aged programs.

Sliding scale fees based on family income and other help to low-income children from the center were more common among nonprofit than for-profit centers. Nearly one-third of nonprofit centers (31.4%), but only 7% of for-profit centers offered sliding scales. Forty percent of nonprofit and 18% of for-profit centers offered some other form of help to low-income children. A significantly smaller percent of centers in North Carolina used sliding scales (10% overall). Centers that served more children with public subsidies were also more likely to offer sliding scales.

For-profit centers were more likely to use their own profits to pay for whatever subsidies they offered to children (Table 8.7), while nonprofit centers were more likely to use funds from sponsors or other outside funding. The greater frequency of subsidies in nonprofit centers, however, meant that as a fraction of total centers, the number of centers using profits to fund subsidies was nearly identical in the two sectors. The extra subsidies in the nonprofit sector came from the outside sources. There is no way to tell from these data whether the subsidies were offered to assist children or merely to fill vacant slots. Centers serving more publicly subsidized children were significantly less likely to use their own profits to subsidize children and more likely to use outside sources.

Sources of Financing

Nonprofit centers, and centers serving more publicly subsidized children, showed more variety in income streams for the center as a whole, with more of them tapping United Way, local businesses and philanthropic groups and holding fund raising events. The cost of this more diversified funding stream was that nonprofit directors and staff spent an average of 157 hours per year, per center, on fund raising, while for-profit directors and staff spent 44 hours per center on average.

Fee Increases

Seventy-one percent of all centers had raised their fees in 1992 or 1993 and only 11% had last raised them in 1990 or earlier. The average increase, when fees were last increased, was 6.89%. Connecticut centers, and particularly Connecticut for-profit centers, were significantly more likely to have gone longer without increases, possibly reflecting the greater severity of the recession in Connecticut than in the other states. Overall, for-profit centers were significantly more likely to have raised rates recently than nonprofit centers. The amount of the last increase and the plans to increase fees over the next six months were not significantly related to state, sector, or age composition of children. However, centers serving more infant/toddlers had raised fees somewhat more, and centers serving a higher percentage of subsidized children reported fewer plans to raise rates.

SUPPLEMENTAL ANALYSES OF SCALE AND QUALITY

Size of Center

Analysis of centers by size (Table 8.8), showed that larger centers had lower expended cost per child hour than smaller ones. Centers were divided into three size groups based on FTE enrollment. Small centers enrolled less than 40 FTE children (122 centers), medium 40 to 80 (153 centers), and large greater than 80 (124 centers). The size groups were then compared, holding state and profit sector constant. To simplify the table, the sector means are excluded.

In general, costs, revenues, subsidies, and public support per child hour declined as the size of the center increased. Revenue from parent fees and profit per child hour showed no significant difference.

Among cost components, labor costs per child hour declined as size increased. Small centers averaged $1.69 per child hour while medium and large centers both averaged $1.41. Occupancy costs did not differ significantly. Total expended costs per child hour averaged $2.39 in small centers, $2.02 in medium centers, and $1.97 in large ones. The decline in expended costs as size grew was largest in California and Colorado but nonexistent in Connecticut and North Carolina. Full cost of care was also lower in larger centers - $3.18 in small, $2.71 in medium, and $2.52 in large centers.

Total Revenue per child hour declined as size increased, from $2.43 in small centers to $2.09 in medium and $2.05 in large centers. As both cost and revenue declined with size of center, the differences in profits or surplus were not significant. Subsidies, particularly volunteers per child hour fell as size increased. The percentage of subsidized children did not differ significantly or consistently across states and sectors with size. Foregone earnings were not significantly related to size.

Fee revenue from parents in for-profit centers declined as size increased except in North Carolina. However, maximum monthly fees and state reimbursement rates showed no significant relation to size.

Overall, the results showed significant economies of scale in child care centers. The costs in large centers were as much as 20% lower than in small centers. Revenues were also lower, neutralizing any effect on profits. However the relationship between actual fees and subsidized children and size of center was too complex to sort out with this level of analysis.

Quality of Care

The structure of our study provided no obvious place to compare quality of care with the financial variables of cost, revenues, fees and subsidies. These relationsips were, nevertheless, of great interest to the study team. Therefore, three-way ANOVA tests were performed by quality and the financial data reported in this chapter.

The centers were divided into poor quality (quality index below 3), mediocre (between 3 and 5) and developmentally appropriate (above 5). The values of monthly fees for preschoolers and infants, expended cost per child hour, labor cost per child hour, facilities cost per child hour, in-kind donations, foregone earnings by job title, full cost per child hour, total revenue per child hour, and profit per child hour were all tested against the three categories of quality, holding state and profit sector constant. While the higher quality centers tended to have higher costs and revenues, the results were uniformly not statistically significant. That is, for example, monthly fees were not significantly different in centers with different quality levels. Nor were expended costs per child hour, nor other cost variables, nor revenues, nor profits.

The quality analysis was also performed on cost data deflated by the cost of living index for each state. In that case, if the effects of location were ignored, then quality was related to expended costs (one point change in quality implied a 10% change in cost), but when state was held constant, this relationship disappeared again.

There appears to be some relationship between quality and cost, but without resorting to the more sophisticated, multivariate models in chapters 12 and 13, it cannot be said with confidence that developmentally appropriate care is more expensive than mediocre or poor care.

COSTS TO SOCIETY, CENTERS, AND PARENTS

Table 8.9 summarizes who pays for child care as a result of the analysis reported in this chapter. It shows the relationship on average between the full cost of the resources used in ECE (valued at their alternative uses) the actual or expended cost to the centers, and the cost to parents for care. The Table shows five definitions of the cost of care and their relationships to each other.

(1) Full cost of care is the broadest definition; it includes all costs to the center plus the value of all subsidies, even the implicit subsidy from foregone wages.

(2) Cost with in-kind donations includes expended costs of the center and in-kind donations, but excludes foregone wages. If one believes that ECE workers are fully compensated for their work and are therefore making no donation of their labor, then this would be the full cost of ECE including donations.

(3) Expended Costs are what the center sees as costs, excluding in-kind donations, but still including cash subsidies from public and private sources.

(4) Total revenue includes expended cost plus profit.

(5) Parent fees are the average of revenues per parent, but that average includes the parents of subsidized children who pay less than full fees, or even nothing. Fees for parents who pay the full fee in a given center would be substantially higher. In for-profit centers, parent fees for most parents approximately equal cash costs to the center. In nonprofits, the smaller number of parents who pay full fees may means that parent fees will not be as high as cash costs.

(6) Net parent cost is the actual cost of child care to the parent after allowing for the child care credit. Nearly all parents are entitled to a credit on their income taxes for child care expenses. That credit rate ranges from 30% of child care expenses for lower income parents down to 20% for middle and upper income parents (adjusted gross income greater than $28,000). As the credit is limited by the earnings of the parent with the lower income, most, but not all, parents will qualify if both have earnings. Given the average incomes of parents in these centers, it appears that most families would qualify only for the 20% credit. Net Parent cost is the average parent fee after deducting that 20% income tax credit.

On average, parents paid for less than half the full cost of ECE, although that fraction was slightly higher in for-profit centers and for parents who paid the center's full fee. Another 35% was paid by the federal child care income tax credit or cash contributions by states and other organizations and this share was somewhat higher in nonprofit centers. In-kind donations amounted to less than 10% of full costs. Foregone earnings accounted for almost 20% of full cost. While the overall pattern of cost sharing was similar across states, the effect was to charge parents a somewhat smaller part of the cost of providing care in the states with higher costs.

Parents' payments were higher for those who paid the center's full fee. Those parents paid, on average $1.92 per child hour for preschool fees. Even here, the child care tax credit reduced their costs by an average of $.21 per child hour or about 60% of the full cost.

In for-profit centers, overall, parent fees represented almost 90% of center total revenue, $1.84 per child hour, and 70% of the estimated $2.62 full cost of care. After deducting the child care tax credit, parent fees amounted to 62% of for-profit full cost. In nonprofits, because of a smaller percentage of parents paid full tuition, parents paid on average $1.25 per child hour or about 40% of the $3.04 full cost of care.

If parents paid all of the costs of child care, their burden would be substantial. A comparison of the expended and full costs of care with family incomes, suggests how much. The average annual expended cost to provide services for one child was $4,940 per year. This represents 8% of the median U.S. dual-earner family before-tax income of $60,000 in 1993 if both were working full-time, or 23% of the 1993 medina before tax income of $21,000 for families headed by a single parent employed full time (*Statistical Abstract of the U. S. 1994*, pp. 429 and 474). The full cost per child was $6,622, 13% of the dual full-time earner family income or 33% of the single parent income.

SUMMARY

- Nonprofit and for-profit centers had similar expended costs, but nonprofit full costs were somewhat higher than for-profit centers full costs. Connecticut centers were substantially more expensive, and North Carolina less expensive, than California and Colorado. Relative to the cost of living in each state, Colorado centers were more expensive than those in California or North Carolina.

- The distribution of expended costs differed by sector with nonprofits spending more on labor and for-profits spending more on facilities. These results hold with or without counting donations of labor and space.

- Fees charged to parents were closely related to expended costs across states and sectors. Reimbursement from the states differed across the four states, with North Carolina paying the highest relative to market rates and Colorado paying the lowest.

- For-profit centers were far more dependent on parent fees than nonprofit, although even in for-profit centers, parents' net cost after taxes was less than two-thirds of the full cost (including both supply and demand subsidies). Cash and in-kind donations were significant sources of revenue for the nonprofits, but were not for the for-profits. The nonprofit centers served substantially more subsidized children and this was associated with higher expended and full costs.

- Profits or surpluses in the sample amounted to about 4% of expended costs. The amount of surplus did not differ significantly between for-profit and nonprofit centers or across states.

- Quality of care in centers did not have any significant relationship to any cost, revenue, or profit variable.

- Economies of scale appeared to be significant. The largest centers had the lowest costs and revenues per child hour. Profits or surpluses did not differ by size.

- Raising wages and benefits to the same level as the average person of the same age, education, gender and minority status earns in the same states, would raise ECE expended costs by about 25%. Relative to their own labor markets, Colorado paid ECE staff worst and Connecticut best.

- Increased proportions of infants and of subsidized children increased costs, revenues and subsidies. Profits or surpluses were not affected.

ENDNOTE

1. Two nonprofit centers from North Carolina serving all special needs children were eliminated from all analyses in this chapter. They were eliminated because they provide a different product and their costs and revenues per child hour were high enough to distort the overall averages.

Chapter 8 Appendix

Tables

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Table 8.1

A Budget for a Typical Child Care Center
Means per Child per Month

Item	Nonprofit		For-profit		All Centers	
	Dollars	*Percent of total*	*Dollars*	*Percent of total*	*Dollars*	*Percent of total*
COST						
Labor	$331.27	78.87 %	$238.69	61.79 %	$284.98	70.33 %
Occupancy	30.96	7.37	78.17	20.24	54.57	13.80
Food	20.70	4.93	16.43	4.25	18.57	4.59
Other Operating	28.25	6.73	40.25	10.42	34.25	8.57
Overhead	8.51	2.03	11.22	2.91	9.87	2.47
Total Cost	$420.01	100.00	$386.30	100.00	$403.16	100.00
REVENUE						
Parent Fees	$244.39	56.46 %	$356.81	88.19 %	$300.60	72.32 %
Public Fees	88.43	20.43	38.12	9.42	63.27	14.93
USDA CAFCP (Food)	12.96	3.00	2.52	0.62	7.74	1.81
Other Public Funds	46.25	10.68	0.00	0.00	23.12	5.34
Other Private Funds	40.83	9.43	7.16	1.77	23.99	5.60
Total Revenue	$432.86	100.00	$404.61	100.00 %	$418.73	100.00
Surplus or Profit	$12.77	2.95 %	$18.31	4.52 %	$15.54	3.74 %

Note: Elements may not add to totals due to rounding.

Table 8.2

Costs per Child Hour

		MEANS BY STATE AND SECTOR									ANOVAS				ANCOVAS			
		CA		CO		CT		NC				F-tests			Standardized Regression Coefficients			
		NP	P	NP	P	NP	P	NP	P	ALL	R-square	State	Sector	State x Sector	R-square	%Sbsd	%Infant	SA Care
	N	51	49	50	50	49	52	48	50	399								
Total Wages	MEAN	1.34	1.03	1.25	0.96	2.04	1.53	0.93	0.65	1.22	0.35	56.78***	38.48***	1.00	0.44	0.13**	0.23***	-0.10*
	STD	0.51	0.55	0.53	0.55	0.85	0.69	0.29	0.19	0.68		CT>others NC<others	NP>P					
Nonwage Benefits	MEAN	0.25	0.16	0.20	0.14	0.49	0.24	0.15	0.09	0.21	0.35	44.92***	52.17***	9.10***	0.40	0.16***	0.06	-0.14
	STD	0.16	0.15	0.14	0.08	0.32	0.14	0.08	0.05	0.20		CT>others NC<others	NP>P					
Staff Education Cost	MEAN	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.03	4.06**	0.01	0.56	0.06	-0.02	0.14*	0.07
	STD	0.01	0.01	0.01	0.04	0.01	0.02	0.01	0.00	0.02		CT,CO>CA,NC						
Subcontractor Cost	MEAN	0.02	0.02	0.03	0.03	0.08	0.04	0.04	0.01	0.03	0.05	4.04**	4.13**	1.60	0.08	0.18***	-0.03	-0.03
	STD	0.05	0.04	0.07	0.06	0.21	0.05	0.06	0.02	0.09		CT > Others	NP>P					
Total Labor Cost	MEAN	1.62	1.22	1.48	1.14	2.63	1.82	1.11	0.75	1.47	0.37	59.28***	45.93***	2.57	0.45	0.15***	0.20***	-0.11*
	STD	0.65	0.68	0.65	0.67	1.19	0.79	0.34	0.20	0.88		CT>others, , NC<others	NP>P					
Occupancy Cost	MEAN	0.17	0.48	0.20	0.46	0.18	0.42	0.09	0.25	0.28	0.27	10.24***	108.78***	1.57	0.27	0.04	0.00	-0.01
	STD	0.17	0.38	0.18	0.33	0.15	0.27	0.09	0.12	0.27		NC<others	P>NP					
Food Cost	MEAN	0.07	0.07	0.11	0.11	0.10	0.07	0.14	0.09	0.10	0.09	7.54***	8.01**	2.57*	0.23	0.40***	0.01	-0.05
	STD	0.08	0.08	0.08	0.07	0.08	0.08	0.08	0.06	0.08		CO,NC>CA,CT	NP>P					
Insurance Cost	MEAN	0.02	0.05	0.03	0.04	0.05	0.05	0.02	0.03	0.04	0.14	11.60***	14.10***	4.83**	0.15	0.12*	0.03	0.02
	STD	0.03	0.05	0.02	0.02	0.07	0.03	0.02	0.01	0.04		CT>others NC<CA	P>NP					
Other Operating Cost	MEAN	0.12	0.21	0.15	0.25	0.19	0.24	0.11	0.13	0.18	0.11	8.75***	19.01***	1.62	0.12	-0.01	0.01	0.02
	STD	0.09	0.15	0.10	0.19	0.19	0.17	0.06	0.06	0.15		Others>NC CT>CA	P>NP					
Overhead	MEAN	0.01	0.03	0.03	0.03	0.01	0.01	0.01	0.03	0.02	0.02	0.94	1.27	1.38	0.03	0.11	0.02	0.05
	STD	0.06	0.10	0.10	0.07	0.10	0.02	0.04	0.07	0.08								
Total Expended Cost	MEAN	2.02	2.07	2.01	2.03	3.18	2.59	1.48	1.30	2.09	0.28	47.50***	3.82	2.69*	0.36	0.18***	0.17***	-0.09
	STD	0.75	1.08	0.86	1.14	1.30	0.77	0.43	0.31	1.04		CT>others NC<others		CT:NP>P				

***p<.001
**p<.01
*p<.05

Note: Elements may not add to totals due to rounding.

%Sbsd=% of enrollment that is subsidized
% Infant=% of enrollment that is infant-toddler
SA Care=Care of School-aged children

Table 8.3

Revenue per Child Hour

		MEANS BY STATE AND SECTOR									ANOVAS				ANCOVAS			
		CA		CO		CT		NC			F-tests				Standardized Regression Coefficients			
		NP	P	NP	P	NP	P	NP	P	ALL	R-square	State	Sector	State x Sector	R-square	%Sbsd	%Infant	SA Care
	N	51	49	50	50	49	52	48	50	399								
Parent Fees	MEAN	$1.25	$2.13	$1.16	$1.74	$1.78	$2.35	$0.87	$1.15	$1.56	0.24	24.55***	42.78***	1.84	0.47	-0.50***	0.12**	-0.07
	STD	0.85	0.94	0.70	1.14	1.34	0.79	0.56	0.45	1.01		CT>others NC<others	P>NP					
Public Fees	MEAN	0.57	0.04	0.30	0.28	0.66	0.21	0.29	0.25	0.33	0.10	1.75	21.07***	5.54**	0.48	0.66***	0.06	-0.01
	STD	0.97	0.08	0.42	0.30	0.92	0.35	0.55	0.26	0.59			NP>P					
USDA	MEAN	0.05	0.01	0.08	0.03	0.06	0.01	0.08	0.01	0.04	0.11	2.24	43.04***	0.20	0.43	0.61***	-0.06	0.01
	STD	0.14	0.04	0.11	0.06	0.07	0.04	0.09	0.04	0.09			NP>P					
Sponsor Contributions	MEAN	0.01	0.00	0.04	0.00	0.16	0.06	0.08	0.00	0.04	0.04	3.22*	5.25*	0.62	0.06	-0.11*	-0.01	-0.13*
	STD	0.05	0.00	0.15	0.03	0.63	0.29	0.17	0.00	0.26		CT>others	NP>P					
Other Public Funds	MEAN	0.11	0.00	0.31	0.00	0.35	0.00	0.19	0.00	0.12	0.08	1.47	26.69***	1.47	0.28	0.47***	-0.07	-0.01
	STD	0.55	0.00	0.73	0.00	0.75	0.00	0.57	0.00	0.48			NP>P					
Other Private Funds	MEAN	0.09	0.01	0.16	0.01	0.22	0.05	0.03	0.01	0.07	0.09	3.89**	18.78***	2.29	0.16	0.27***	0.10*	0.08
	STD	0.21	0.03	0.27	0.03	0.55	0.21	0.05	0.03	0.25		CT>CA,NC	NP>P					
Other Revenue	MEAN	0.00	0.00	0.02	0.01	0.01	0.00	0.01	0.00	0.01	0.03	2.53	4.25*	0.33	0.04	-0.08	-0.003	-0.02
	STD	0.01	0.01	0.10	0.03	0.04	0.00	0.03	0.03	0.04			NP>P					
Total Revenue	MEAN	2.09	2.20	2.08	2.07	3.24	2.67	1.53	1.43	2.17	0.27	44.49***	2.58	2.71*	0.33	0.19***	0.13**	-0.08
	STD	0.75	0.93	0.83	1.08	1.44	0.88	0.57	0.35	1.05		CT>others NC<others		CT:NP>P				
Surplus/ Deficit	MEAN	0.07	0.13	0.07	0.04	0.06	0.07	0.05	0.13	0.08	0.01	0.31	0.62	0.46	0.02	0.03	-0.12*	0.03
	STD	0.26	0.40	0.22	0.28	0.62	0.31	0.34	0.28	0.36								

See notes for table 8.2

Table 8.4

Subsidies per Child Hour

		MEANS BY STATE AND SECTOR									ANOVAS F-tests				ANCOVAS Standardized Regression Coefficients			
		CA		CO		CT		NC		ALL								
		NP	P	NP	P	NP	P	NP	P		R-square	State	Sector	State x Sector	R-square	%Sbsd.	%Infant	SA Care
	N	51	49	50	50	49	52	48	50	399								
Volunteer Subsidy	MEAN	0.08	0.02	0.06	0.02	0.07	0.04	0.04	0.01	0.04	0.06	1.85	15.55***	0.52	0.12	0.25***	0.09	-0.04
	STD	0.15	0.05	0.14	0.07	0.12	0.09	0.08	0.02	0.10			NP>P					
Occupancy Subsidy	MEAN	0.21	0.02	0.14	0.01	0.38	0.20	0.17	0.01	0.14	0.12	9.55***	26.29***	0.16	0.14	0.07	0.13*	-0.01
	STD	0.26	0.10	0.20	0.04	0.43	0.68	0.17	0.03	0.34		CT>CO,NC CA>CO	NP>P					
Other Subsidies	MEAN	0.02	0.01	0.03	0.00	0.04	0.02	0.02	0.00	0.02	0.08	4.57**	16.67***	1.14	0.09	0.05	0.11*	0.03
	STD	0.02	0.05	0.05	0.01	0.05	0.04	0.05	0.01	0.04		CT>others	NP>P					
Total In-kind Subsidies	MEAN	0.30	0.05	0.23	0.04	0.48	0.26	0.23	0.02	0.20	0.15	10.28***	37.04***	0.14	0.19	0.13*	0.15**	-0.02
	STD	0.36	0.14	0.29	0.10	0.47	0.72	0.22	0.04	0.39		CT>others	NP>P					
Total Cost + In-kind Subsidies	MEAN	2.32	2.11	2.24	2.07	3.66	2.85	1.71	1.31	2.29	0.28	45.74***	13.63***	1.91	0.37	0.19***	0.19***	-0.08
	STD	0.93	1.15	1.02	1.15	1.55	1.33	0.55	0.30	1.25		CT>others NC<others	NP>P					
Foregone Wage and Ben	MEAN	0.55	0.51	0.70	0.74	0.44	0.61	0.46	0.36	0.55	0.06	6.39***	0.16	1.32	0.08	-0.12*	0.06	0.03
	STD	0.42	0.60	0.47	0.43	0.90	0.36	0.19	0.20	0.50		CO > Others						
Full Cost of Care	MEAN	2.86	2.63	2.85	2.75	4.07	3.45	2.17	1.67	2.81	0.24	38.15***	8.79**	0.97	0.30	0.13**	0.18***	-0.05
	STD	1.06	1.58	1.01	1.41	1.67	1.37	0.61	0.42	1.39		CT>others NC<others	NP>P					
Fringe Benefits Ratio	MEAN	1.20	1.19	1.21	1.23	1.24	1.21	1.19	1.20	1.21	0.04	2.97*	0.00	1.68	0.04	0.04	-0.06	0.04
	STD	0.09	0.08	0.12	0.10	0.11	0.12	0.09	0.10	0.10		CT>CA,NC						
Wage & Ben Premium	MEAN	1.38	1.47	1.56	1.65	1.25	1.37	1.46	1.49	1.45	0.12	15.11***	6.69*	0.30	0.15	-0.15**	-0.03	0.06
	STD	0.28	0.33	0.30	0.27	0.45	0.20	0.24	0.32	0.32		CO>CA,NC>CT	P>NP					

See notes for table 8.2

Table 8.5

Monthly Fees and Reimbursement Rates

		MEANS BY STATE AND SECTOR									ANOVAS				ANCOVAS			
		CA		CO		CT		NC		TOTAL		F-tests			Standardized Regression Coefficients			
		NP	P	NP	P	NP	P	NP	P		R-square	State	Sector	State x Sector	R-square	%Sbsd	%Infant	SA Care
MAXIMUM MONTHLY FEES:																		
	N	9	15	15	17	18	30	28	45	177								
Infants	MEAN	$517	$562	$464	$474	$630	$632	$289	$310	$454	0.70	124.85***	1.55	0.30	0.72	-0.14**	0.00	-0.06
	STD	181	59	86	84	108	137	37	59	167		CT>CA>CO>NC						
	N	17	24	20	40	24	36	33	48	242								
Toddlers	MEAN	415	490	387	413	629	627	283	305	433	0.66	141.81***	5.54*	1.32	0.67	-0.09*	0.06	-0.08
	STD	165	117	80	59	126	119	45	54	158		CT>CA>CO>NC	P>NP					
	N	17	28	18	38	20	29	37	47	234								
Older Toddlers	MEAN	364	454	370	397	591	609	266	288	400	0.67	143.19***	10.71**	1.79	0.68	-0.09*	-0.02	-0.06
	STD	105	101	63	49	132	139	46	49	147		CT>CA,CO>NC	P>NP					
	N	45	48	48	49	47	51	46	48	382								
Preschoolers	MEAN	368	404	338	357	487	492	248	279	372	0.54	144.13***	8.28**	0.75	0.57	-0.13*	0.07	-0.06
	STD	103	69	75	51	109	89	43	43	112		CT>CA>CO>NC	P>NP					
	N	15	23	30	43	17	36	19	42	225								
Schoolage	MEAN	306	340	187	228	304	308	122	155	235	0.44	50.29***	5.38*	0.49	0.47	-0.02	0.01	-0.21***
	STD	116	78	76	59	117	132	32	28	110		CA>CT>CO>NC	P>NP					
SOCIAL SERVICE REIMBURSEMENT FEES:	N	7	6	11	13	15	12	21	36	121								
Infants	MEAN	536	446	373	328	526	543	301	289	380	0.58	48.88***	2.89	1.19	0.61	0.14	0.07	-0.07
	STD	185	104	62	75	135	138	35	42	136		CA,CT>CO>NC						
	N	10	9	16	36	18	18	25	39	171								
Toddlers	MEAN	445	440	318	304	504	539	289	284	360	0.55	62.54***	0.03	0.56	0.58	0.13*	0.13*	-0.01
	STD	172	124	60	55	139	137	38	44	130		CT>CA>CO,NC						
	N	22	20	36	39	35	34	34	38	258								
Preschoolers	MEAN	385	383	262	268	417	408	260	269	324	0.51	87.54***	0.01	0.26	0.54	0.12*	0.11*	-0.02
	STD	88	51	37	41	117	88	35	42	96		CT>CA>CO,NC						
	N	8	4	15	33	13	11	11	33	128								
Schoolage	MEAN	304	298	174	184	352	323	150	153	212	0.46	29.95***	0.10	0.29	0.54	0.08	0.04	-0.30***
	STD	88	68	44	31	197	120	55	45	110		CA,CT>CO CA,CT>NC						

See notes for table 8.2

Table 8.6
Center Fee Policies

		MEANS BY STATE AND SECTOR									ANOVAS				ANCOVAS			
		CA		CO		CT		NC		TOTAL		F-tests			Standardized Regression Coefficients			
		NP	P	NP	P	NP	P	NP	P		R-square	State	Sector	State x Sector	R-square	%Sbsd	%Infant	SA Care
EXTRA FEES:																		
Percent of Families Paying Lunch Fees	N	30	21	37	24	33	28	38	24	235	0.05	2.26	1.32	2.09	0.07	-0.11	0.05	0.09
	MEAN	2.4	8.6	4.1	0.5	1.5	6.0	0.0	0.0	2.7								
	STD	7.4	19.0	13.8	1.4	8.7	20.6	0.0	0.0	11.6								
Percent of Families Paying Breakfast Fees	N	29	29	35	28	32	29	38	27	237	0.19	4.45** CO,NC>CA, CO>CT	23.71*** P>NP	4.74**	0.02	-0.07	-0.09	-0.04
	MEAN	0.3	0.5	0.0	6.8	0.0	1.6	0.2	4.8	1.7								
	STD	1.5	2.1	0.0	9.3	0.0	4.9	1.5	10.2	5.6								
Percent of Families Paying Diaper Fees	N	29	20	35	21	32	29	38	24	228	0.05	1.33	6.52* P>NP	1.04	0.06	-0.04	0.06	-0.08
	MEAN	0.3	2.3	0.0	2.4	0.0	1.0	0.0	0.0	0.6								
	STD	1.7	7.6	0.0	8.9	0.0	4.6	0.0	0.0	3.9								
Percent of Families Paying Fees for Lessons	N	31	30	42	31	36	36	39	37	282	0.07	2.51	13.06*** P>NP	0.38	0.10	-0.13*	-0.06	0.06
	MEAN	7.1	18.7	13.6	21.7	5.9	11.7	2.8	15.6	11.9								
	STD	13.1	23.7	29.5	27.1	20.8	24.7	10.3	19.8	22.6								
Percent FTE Part-time	N	35	43	37	40	39	49	31	41	315	0.20	20.9*** NC<Others, CT>CA	3.91* P>NP	1.62	0.27	-0.26***	-0.10	0.04
	MEAN	20.3	20.3	22.1	26.0	20.4	32.8	2.4	4.0	19.3								
	STD	24.1	21.5	23.9	15.3	25.0	23.7	4.5	5.4	21.9								
PROPORTION CENTERS WITH																		
Higher Rates for Part-time Children	N	47	48	50	50	47	52	49	46	389	0.14	9.94*** NC<Others, CO>CT	27.0*** P>NP	1.26	0.20	-0.27***	0.07	0.04
	PROP	0.53	0.81	0.72	0.84	0.43	0.83	0.18	0.85	0.61								
Discounts for Multiple Children	N	41	47	41	50	43	49	39	47	357	0.08	0.62	28.0*** P>NP	0.55	0.08	0.00	0.03	-0.02
	PROP	0.73	0.94	0.78	0.94	0.79	0.94	0.67	0.94	0.85								
Discounts to Certain Businesses	PROP	0.07	0.30	0.20	0.60	0.02	0.18	0.08	0.40	0.24	0.19	9.09*** CO>Others, NC>CT	45.1*** P>NP	1.73	0.21	-0.02	0.00	0.16**
Discounts for Staff	PROP	0.61	0.83	0.90	0.96	0.51	0.80	0.67	0.91	0.78	0.13	8.42*** CO>Others, NC>CT	23.9*** P>NP	1.49	0.22	-0.22***	-0.05	0.19***
Other Discounts	PROP	0.22	0.17	0.34	0.28	0.19	0.18	0.08	0.19	0.21	0.03	3.03* CO>CT,NC	0.00	0.86	0.06	-0.09	-0.11	0.07
Sliding Scale for Children Not Subsidized	N	49	49	50	48	49	52	50	50	397	0.13	2.89* NC<Others	42.5*** NP>P	2.79*	0.30	0.44***	-0.01	0.07
	PROP	0.27	0.14	0.38	0.08	0.43	0.04	0.18	0.02	0.19								
Other Help to Low Income Children	N	48	46	49	50	48	52	50	50	393	0.07	0.05	24.0*** NP>P	0.41	0.07	-0.03	-0.04	0.06
	PROP	0.38	0.17	0.41	0.24	0.40	0.19	0.40	0.10	0.28								

See notes for table 8.2

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Table 8.7

Supplemental Financial Sources, Fee Increases

		MEANS BY STATE AND SECTOR									ANOVAS				ANCOVAS			
		CA		CO		CT		NC		TOTAL		F-tests			Standardized Regression Coefficients			
		NP	P	NP	P	NP	P	NP	P		R-square	State	Sector	State x Sector	R-square	%Sbsd	%Infant	SA Care
SUBSIDY FINANCING, PROPORTION OF CENTERS USING																		
	N	24	15	30	22	23	13	26	5	158								
Profits	PROP	0.46	0.80	0.47	0.91	0.65	0.85	0.31	0.60	0.59	0.18	1.68	14.20*** P>NP	0.51	0.31	0.37***	-0.12	-0.11
Funds from Sponsor	PROP	0.39	0.00	0.39	0.09	0.52	0.07	0.56	0.20	0.33	0.18	0.77	21.70*** NP>P	0.21	0.18	0.00	0.01	0.00
Outside Funding	PROP	0.50	0.21	0.47	0.05	0.41	0.00	0.44	0.50	0.34	0.15	1.51	9.34** NP>P	1.16	0.22	0.29***	0.02	0.06
FUNDING SOURCES, PROPORTION OF CENTERS USING																		
	N	47	27	45	29	46	34	43	33	304								
Parents and Members	PROP	0.94	0.89	0.96	0.93	0.96	0.91	0.86	0.82	0.91	0.03	2.04	1.42	0.02	0.03	-0.03	-0.06	0.03
	STD	0.25	0.32	0.21	0.26	0.21	0.29	0.35	0.39	0.28								
Local Businesses	PROP	0.62	0.37	0.67	0.24	0.54	0.21	0.58	0.52	0.49	0.10	1.76	22.80*** NP>P	1.87	0.11	0.07	0.08	0.11
United Way & Philanthropic Groups	PROP	0.36	0.19	0.58	0.03	0.43	0.03	0.37	0.06	0.29	0.18	0.70	54.50*** NP>P	2.42	0.35	0.43***	0.07	0.08
	N	51	49	49	49	48	52	50	42	390								
Hours per Year Spent Fund Raising	MEAN	202	40	185	57	171	33	68	46	101	0.07	1.48	21.10*** NP>P	1.54	0.10	0.11*	0.09	-0.02
	STD	517	76	299	87	261	57	94	85	250								
FEE INCREASES, PROPORTION OF CENTERS THAT LAST INCREASED FEES																		
	N	44	47	47	47	46	49	45	47	372	0.08	5.80*** CT<Others	10.40*** P>NP	0.94	0.08	-0.06	0.03	-0.04
In 1992 or 1993	PROP	0.75	0.89	0.62	0.85	0.54	0.57	0.62	0.81	0.71								
In 1991	PROP	0.14	0.06	0.26	0.13	0.35	0.14	0.29	0.13	0.19	0.06	2.41	12.80*** NP>P	0.50	0.06	0.06	0.01	0.02
Before 1991	PROP	0.11	0.04	0.13	0.02	0.11	0.29	0.09	0.06	0.11	0.06	3.75* CT<Others	0.04	4.12**	0.07	0.01	-0.07	0.04
Plan to Increase Fees in Next 6 Months	PROP	0.44	0.39	0.59	0.34	0.41	0.50	0.48	0.52	0.46	0.02	0.52	0.72	2.30	0.06	-0.17**	-0.07	0.03
Percent Increased Fees Last Time	MEAN	4.6%	7.0%	6.7%	5.3%	8.5%	6.8%	10.1%	5.9%	6.9%	0.03	1.26	1.41	1.74	0.05	0.09	0.13*	0.01

See notes for table 8.2

Table 8.8

Size of Center
Costs, Subsidies and Revenues per Child Hour

		MEANS BY STATE AND SIZE OF CENTER													ANOVAS F-tests			
		CA			CO			CT			NC							
		Small	Medium	Large	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large	ALL	R-square	State	Size	State x Size
	N	21	42	37	29	38	33	53	39	9	19	34	45	399				
Labor Cost	MEAN	1.84	1.47	1.13	1.64	1.26	1.08	2.38	2.07	1.87	0.89	0.96	0.93	1.47	0.42	34.89*** CT>Others CA,CO>NC	6.06** Small>Others	1.62
	STD	0.84	0.75	0.34	0.93	0.56	0.40	1.17	0.97	0.87	0.42	0.37	0.26	0.88				
Occupancy Cost	MEAN	0.35	0.32	0.31	0.37	0.29	0.35	0.29	0.29	0.44	0.15	0.14	0.21	0.28	0.3	10.86*** Others > NC	0.59	1.37
	STD	0.29	0.42	0.23	0.43	0.25	0.18	0.26	0.22	0.28	0.11	0.12	0.14	0.27				
Total Cost	MEAN	2.56	2.08	1.70	2.43	1.95	1.73	3.07	2.68	2.58	1.33	1.39	1.41	2.09	0.35	30.27*** CT>Others CA,CO>NC	7.00*** Small>Others	1.95
	STD	1.02	1.06	0.46	1.51	0.77	0.48	1.12	1.07	0.90	0.47	0.45	0.28	1.04				
Full Cost of Care	MEAN	3.25	2.90	2.28	3.20	2.78	2.47	4.15	3.35	3.11	1.94	1.95	1.87	2.81	0.31	20.36*** CT>Others CA,CO>NC	7.30*** Small>Others	1.29
	STD	1.24	1.72	0.56	1.73	1.00	0.75	1.80	1.10	0.92	0.60	0.71	0.45	1.39				
Total In-kind Subsidies	MEAN	0.21	0.22	0.11	0.24	0.13	0.04	0.50	0.24	0.09	0.14	0.15	0.09	0.20	0.2	2.37	3.82* Small>Others	1.45
	STD	0.32	0.37	0.17	0.29	0.25	0.06	0.78	0.34	0.13	0.19	0.23	0.15	0.39				
Foregone Wage and Benefits	N	21	42	36	21	37	32	49	38	9	19	34	44	382				
	MEAN	0.48	0.60	0.48	0.73	0.72	0.72	0.63	0.43	0.44	0.46	0.41	0.39	0.55	0.11	8.43*** CO > Others	1.52	1.12
	STD	0.58	0.62	0.27	0.61	0.44	0.34	0.83	0.40	0.60	0.27	0.20	0.17	0.50				
Total Revenue	N	21	42	37	29	38	33	53	39	9	19	34	45	399				
	MEAN	2.60	2.12	1.91	2.44	2.00	1.84	3.08	2.84	2.58	1.49	1.44	1.50	2.17	0.31	25.86*** CT>Others CA,CO>NC	5.48** Small>Others	0.97
	STD	1.01	0.84	0.64	1.43	0.74	0.47	1.36	1.05	0.93	0.74	0.44	0.35	1.05				
Surplus/Deficit	MEAN	0.04	0.04	0.21	0.01	0.05	0.11	0.01	0.16	0.00	0.16	0.05	0.09	0.08	0.05	0.63	0.28	1.57
	STD	0.38	0.34	0.29	0.30	0.26	0.20	0.59	0.34	0.30	0.51	0.26	0.23	0.36				
Parent Fees	MEAN	1.82	1.66	1.63	1.65	1.37	1.41	2.05	2.16	2.00	0.78	0.89	1.22	1.57	0.28	13.69*** Others>NC	1.61	2.30*
	STD	1.33	0.95	0.82	1.53	0.70	0.59	1.19	1.03	1.04	0.57	0.56	0.38	1.00				
Maximum Monthly Fee for Preschoolers	N	18	39	36	26	38	33	51	39	9	18	34	45	386	0.56	92.07*** CT>CA CA>CO>NC	3.09* Medium > Small	3.06**
	MEAN	393.6	393.4	375.4	340.3	350.0	350.3	466.5	506.1	490.8	191.6	251.1	284.7	368.9				
	STD	118.0	81.3	79.7	70.0	64.4	60.3	114.2	111.0	58.6	98.3	43.0	34.7	117.6				
Social Service Reimbursement Fees for Preschoolers	N	6	19	17	20	30	25	29	31	9	13	26	33	258				
	MEAN	438.3	359.2	392.4	263.6	276.7	252.3	414.3	403.7	435.3	235.0	259.8	279.4	323.6	0.56	71.29*** CA,CT>CO,NC	1.04	1.78
	STD	63.5	76.9	58.9	34.1	45.0	30.3	121.9	89.9	81.8	44.9	35.4	32.5	95.8				

See notes for table 8.2

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Table 8.9

Total Cost, Subsidies and Parent Cost of Center Care per Child Hour

	MEANS BY STATE AND SECTOR								Total	Percent of Full Cost
	CA		CO		CT		NC			
	NP	P	NP	P	NP	P	NP	P		
(1) Full Cost of Care	$2.83	$2.63	$2.85	$2.75	$4.07	$3.45	$2.17	$1.67	$2.81	100%
less staff foregone earnings	0.55	0.51	0.70	0.74	0.44	0.61	0.46	0.36	0.55	19
(2) Cost with in-kind donations	2.32	2.11	2.24	2.07	3.66	2.85	1.71	1.31	2.29	82
less in-kind donations	0.30	0.05	0.23	0.04	0.48	0.26	0.23	0.02	0.20	7
(3) Expended Center Costs	2.02	2.07	2.01	2.03	3.18	2.59	1.48	1.30	2.09	75
(4) Total Revenue	$2.09	$2.20	$2.08	$2.07	$3.24	$2.67	$1.53	$1.43	$2.17	77
less cash contributions	0.84	0.07	0.92	0.33	1.46	0.32	0.66	0.28	0.61	23
(5) Parent Fee Payments	1.25	2.13	1.16	1.74	1.78	2.35	0.87	1.15	1.56	55
less income tax credit	0.17	0.24	0.15	0.20	0.17	0.27	0.14	0.16	0.19	7
(6) Net Parent Cost	$1.08	$1.89	$1.01	$1.54	$1.61	$2.08	$0.73	$0.99	$1.37	48

NOTE: Elements may not add to totals due to rounding

Chapter 9

Descriptive Analysis of Preschool Children's Developmental Outcomes

by ELLEN S. PEISNER-FEINBERG & MARGARET BURCHINAL

OVERVIEW

This chapter presents descriptive comparisons by state and sector of the concurrent developmental outcomes of preschool children who were attending a subsample of the classes observed for collection of the quality data. The children were in their next-to-last year of preschool at the time of data collection, and were assessed during the same year in which the cost and quality information was gathered. The developmental outcomes data are represented by the Children domain in the conceptual model (Figure 2.1). In addition, one family characteristic related to children's developmental outcomes (maternal education) was examined, represented by the Family domain. This domain was included as a control, so that differences in children's outcomes were examined after accounting for the effects of the family. Analyses of the process quality index, from the Classroom Process Quality domain of the model, are also presented for the subsample of classes included in the outcomes data collection.

ANALYSIS PLAN

The data were examined descriptively to determine whether there were any mean differences in these domains by state or center sector or their interaction. Because the outcomes data included repeated measures for more than one child at the same center, the analyses controlled for child care center to adjust for systematic variation among children due to the shared child care experience. In addition, maternal education was included as a covariate in these analyses to control for family effect on children's outcomes. In contrast to the statistical techniques used in previous chapters, hierarchical linear models were used to test whether there were differences in children's outcomes by state, sector, or the interaction of state and sector, adjusting for maternal education and child care center. These analyses are a form of analysis of covariance (ANCOVA) which allows for both fixed effects and random effects variables within the model, as well as for control variables. In these models, state, sector, and maternal education were treated as fixed-effects variables, and child care center as a random-effects variable. Pairwise comparisons were used to test the means when the main effect for State or the State x Sector interaction were significant.

Next, the relationships between children's outcomes and three program scope variables derived from data at the child care center level were examined. The three program scope variables included: the proportion of children who were infants/toddlers, using percent of full-time equivalent enrollment; the percent of subsidized children at the center; and whether school-age children are served, as indicated by the presence or absence of a before- or after-school program. Hierarchical linear models were used to conduct analyses of covariance (ANCOVA) examining the effects of program scope, controlling for state and sector, as well as for maternal education and within-center effects.

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In addition, state and sector differences were examined for maternal education, adjusting for child care center. The relationship between program scope and maternal education, controlling for state, sector, and within-center effects was also examined. The classroom process quality scores for this subsample of preschool classes was analyzed for state and sector differences, as well as for the relationship to the three program scope variables after adjusting for state and sector effects.

MEASURES

Developmental outcomes data were gathered from individual assessments of the children by trained assessors and from teacher ratings of the children. The individual assessments included three summary measures of cognitive skills and one measure of attitudes and self-perceptions. Receptive language ability, or children's understanding of language, was measured using age-standardized scores from the *Peabody Picture Vocabulary Test-Revised*, PPVT-R, (Dunn & Dunn, 1981). Pre-reading skills, such as recognition of letters, were measured using the age-standardized score for the letter-word identification subtest of the *Woodcock Johnson Tests of Achievement-Revised*, WJ-R, (Woodcock & Johnson, 1989; 1990). Children's pre-math skills, such as simple counting and comparisons among different numbers of things, were measured using the age-standardized score for the applied problems subtest of the WJ-R. Children's attitudes toward child care and perceptions of their own competence were examined using the total score from the *Attitudes/Perceptions of Competence* scale (Stipek, 1993). See Chapter 3 for more detail.

Based on teacher ratings, three factor scores of children's social skills were analyzed. A positive behavior factor - which rated children's creativity, independence, task orientation, and verbal intelligence - was derived from the *Classroom Behavior Inventory*, CBI, (Schaefer, Edgerton, & Aaronson, 1978). A second CBI factor, sociability, was a rating of extroversion and general happiness or affect. The third CBI factor, problem behaviors, measured children's hostility, distractibility, and reversed scoring of considerateness.

Teachers also rated their relationship with each child using the *Student Teacher Relationship Scale*, STRS, (Pianta, 1992; Pianta & Steinberg, 1992), and two factors were derived from this measure. The STRS global positive factor measured the warmth of the teacher-child relationship and openness of communication between the teacher and child. The STRS global negative factor rated conflict/anger, dependency, and troubled feelings in the teacher-child relationship. (Further information about the scoring and factor analyses of all these variables is provided in Chapter 3.)

In addition, information on the level of maternal education, based on the highest degree or amount of schooling obtained, was provided from the parent surveys. These figures were converted to average number of years of education in the analyses. (See Table 3.5 for a description of the sample by reported level of maternal education.)

Because the data collection on children's developmental outcomes included only a subsample of the classes and centers in the cost and quality data collection, analyses of the classroom process quality index were also included to describe this subsample. The classroom process quality index reported here only included scores from the preschool-age classrooms, and not the infant/toddler classrooms, since only the former participated in this phase. Additionally, these classrooms had to be serving children who were in their next-to-last year of preschool (i.e., eligible for kindergarten in the 1994-95 school year) at the time of the cost and quality data collection; classrooms which had only younger or older children were not included in this sample.

RESULTS

Table 9.1 lists the means, standard deviations, and test statistics for comparisons by state, center sector, and program scope of each of the child outcomes measures, maternal education, and quality of the child care classroom. Means and standard deviations are presented by state and sector, as well as the overall total. In these tables, the F-statistics for comparisons of the four state means, the for-profit and nonprofit center means, and the interaction of state and sector can be found in the columns following the means. Unstandardized regression coefficients are listed for the three program scope variables.

LANGUAGE ABILITY (PPVT-R)

Children's receptive language ability differed significantly by state, after accounting for the effects of maternal education, with a significant interaction with center sector. Children in North Carolina tended to have lower language scores than children in the other states, while children in Connecticut tended to have higher scores than children in the other states. A modest State x Sector interaction reflected that the difference in scores between children in for-profit and nonprofit centers was greater in Colorado than in Connecticut or North Carolina. Examination of the means suggests that in Colorado, children in for-profit centers tended to score higher in verbal ability than children in nonprofit centers, whereas there was little difference in children's scores by sector in Connecticut and North Carolina.

There were significant differences in children's scores for one of the scope variables, percentage of subsidized children. This variable was negatively related to children's language scores, indicating that preschool-age children at centers which served a higher proportion of subsidized children scored lower in language ability than children at centers with fewer subsidized children.

PRE-ACADEMIC SKILLS

Similarly to language ability, the pre-academic skills of children differed across the four states, after controlling for the effects of maternal education. The pre-reading skills of children in North Carolina were significantly lower than those of children in the other states. Children in Colorado also had lower pre-reading scores than children in California or Connecticut. Children in Connecticut performed better in pre-math skills than children in the other three states, while children in Colorado also scored higher than those in North Carolina. Finally, a significant effect for sector indicated that children in for-profit centers tended to have better pre-math skills than children in nonprofit centers.

Two of the three program scope variables were related to children's pre-academic skills. Preschool children attending centers serving a higher proportion of subsidized children scored lower in both pre-reading and pre-math skills than children at centers serving fewer subsidized children. In contrast, children at centers serving proportionally more infants/toddlers scored higher in pre-reading ability than those at centers with proportionally fewer infants/toddlers.

ATTITUDES/SEKF-PERCEPTIONS

No differences by state or sector were found in children's perceptions of competence and attitudes toward child care. One difference was found in program scope, with children at centers serving relatively more subsidized children scoring lower on this measure (i.e., having less positive attitudes) than children at centers with fewer subsidized children.

SOCIAL SKILLS

No significant differences by state or sector were found in teacher ratings of children's social skills for all three factors of the CBI - positive behaviors, sociability, and problem behaviors. Similarly, these ratings were not related to any of the program scope variables.

TEACHER-CHILD RELATIONSHIP

No differences by state, center sector, or program scope were found in teacher ratings of either the global positive or global negative factors of the teacher-child relationship.

MATERNAL EDUCATION

Maternal education differed by state and sector. Maternal education was lower in North Carolina than in the other three states, and higher in California than in the other states. Mothers who used for-profit child care centers tended to be more highly educated than those using nonprofit centers; however, there was a significant interaction indicating that this pattern held for California and Connecticut, while the reverse was true in North Carolina, where more highly educated mothers were more likely to use nonprofit than for-profit centers.

Two of the program scope variables showed a negative relationship to maternal education. Mothers of children attending centers with proportionally more subsidized children or centers serving school-age children had less education compared to mothers of children at centers with relatively fewer subsidized children or those not serving school-age children.

CLASSROOM PROCESS QUALITY

The influence of state, sector, and program scope on classroom process quality scores was examined for the subsample of centers included in the outcomes phase of the study. The classroom process quality index for the preschool-age classrooms included in the outcomes sample was used, rather than the average center score which included both the infant/toddler and preschool classrooms, since only preschool-age children were included in this phase of the study.

Significant differences were found by state, with centers in North Carolina and Colorado scoring lower on the quality index than those in California and Connecticut. A significant State x Sector interaction revealed that the difference in quality index scores between nonprofit and for-profit centers was substantially greater in North Carolina than in the other states. The quality index scores tended to be higher in nonprofit than for-profit centers in North Carolina, while there was little difference by sector in the other states.

Provision of programs for school-age children was negatively related to classroom quality, indicating that the quality of preschool classrooms was lower for centers providing school-age care than for centers not providing such care. The other two program scope variables were not significant.

CONCLUSIONS

Overall, these results indicate some consistent differences in children's outcomes related to state, with children in North Carolina tending to be less advanced developmentally than children in the other states studied and children in Connecticut more advanced, after accounting for the effects of maternal education. The differences in children's outcomes are consistent with differences in child care quality. The overall quality of this sample of child care centers was lower in North Carolina and Colorado, and higher in California and Connecticut.

In general, children in North Carolina tended to score lower on measures of cognitive skills than children in the other three states, while children in Connecticut tended to score the highest of the states sampled in this study. These differences in children's cognitive skills were mirrored by differences in maternal education, with mothers in North Carolina having less education than those in the other states.

Differences by sector showed mixed results, with some evidence for higher scores by children in for-profit than nonprofit centers on some cognitive skills. Across the sample, pre-math skills were higher for children in for-profit than non-profit centers. For receptive language ability, this pattern of sector differences was only found in Colorado. Mothers using for-profit child care centers tended to have higher levels of education than those using nonprofit care, although the reverse was true in North Carolina. The overall ratings of child care quality tended to be higher in nonprofit than for-profit centers in North Carolina, while there was little difference by sector in the other states. In general, North

Carolina looks somewhat different from the other states in terms of differences between the nonprofit and for-profit sectors.

There were no differences by state or sector in children's views of themselves and their child care experience. Similarly, teacher ratings of both positive and negative aspects of children's social skills and the teacher-child relationship did not differ by state or sector.

Some differences related to program scope were found, with the most consistent finding being the negative relationship between the proportion of subsidized children at the center and children's outcomes. Children attending centers with a higher proportion of subsidization scored lower in language and pre-academic skills, had less positive views of themselves and their child care experience, and had mothers with less education. This finding is not surprising given the already known relationship between family socioeconomic status and children's development (e.g. Caughy, DiPietro, & Strobino, 1994; Duncan, Brooks-Gunn, & Klebanov, 1994; Walker, Greenwood, Hart, & Carta, 1994), and the likelihood that a greater number of poorer children participated from centers with higher subsidization rates. Additionally, provision of school-age child care was negatively related to both maternal education and classroom quality, although it was not related to any of the measures of children's outcomes.

The results on the process quality of the subsample of classrooms included in the outcomes phase suggest that this sample closely resembles the larger sample in terms of center characteristics. The mean quality index scores for preschool rooms were quite similar in both samples (see Tables 6.2 and 9.1). There were significant state differences in both samples, with centers in North Carolina and Colorado being rated lower than those in California and Connecticut. A significant interaction effect in both samples indicated that higher scores for nonprofit centers compared to for-profit were found only for North Carolina, although the main effect for sector did not reach significance in the outcomes subsample. A comparison of Tables 6.1 and 9.1 shows a similar pattern of results for the program scope variables. Provision of school-age care was negatively related to quality in both samples, while other aspects were not significantly related in either sample. The overall picture suggests that the pattern of results is quite similar across the two samples.

SUMMARY

- After controlling for the effects of maternal education, children in North Carolina tended to score lower on measures of cognitive skills than children in the other three states, while children in Connecticut tended to score higher than the other states sampled.

- These differences in children's outcomes are consistent with differences in child care quality in this sample, with centers in North Carolina and Colorado measuring lower in process quality than centers in California and Connecticut.

- There was some evidence of higher scores on two measures of cognitive skills for children attending for-profit than nonprofit centers, after accounting for maternal education, although this pattern was not found in all states.

- Mothers using for-profit child care tended to be more highly educated than those using nonprofit care, except in North Carolina where the differences were in the opposite direction.

- No differences were found by state, sector, or program scope in teacher ratings of children's social skills or of the teacher-child relationship for both positive and negative aspects of each.

- North Carolina looks somewhat different from the other states in terms of child care quality as well as children's outcomes. The overall quality was lower, although there were greater sector differences in quality than in the other states. In North Carolina, quality was higher in nonprofit than for-profit centers; similarly, maternal education levels were higher in nonprofit than for-profit centers in this state.

- The most consistent finding related to program scope was that children who attended centers with higher proportions of subsidized children scored lower in cognitive skills, had less positive attitudes, and had mothers with less education. This finding may relate to the already known relationship between family income and children's development.

- A similar pattern of results was found for the quality index from both the subsample of centers included in the outcomes phase of the study and the overall sample for which cost and quality data were obtained.

Chapter 9 Appendix

Table

Table 9.1 Child Outcomes, Maternal Education & Child Care Quality

Table 9.1

Child Outcomes, Maternal Education & Child Care Quality

		MEANS BY STATE AND SECTOR									ANCOVAS F-tests			ANCOVAS Regression Coefficients		
		CA		CO		CT		NC		TOTAL						
		NP	P	NP	P	NP	P	NP	P		State	Sector	State x Sector	% Subsidized	% Infant	SA Care
	N	136-138	76-77	94-99	101-104	68-88	85-115	114-127	63-71	766-819						
PPVT-R Language	MEAN	90.3	96.4	90.4	101.3	101.2	102.2	85.2	83.9	93.8	13.17***	2.39	3.25*	-18.65***	-1.64	-2.81
	SD	17.5	15.2	19.2	14.1	17.4	11.9	21.3	18.1	18.4	CT>CA, CO>NC		CO:P>NP			
WJ-R Pre-Reading	MEAN.	101.5	106.9	97.1	99.8	102.9	103.7	94.5	92.6	99.9	16.49***	0.93	1.57	-7.28***	6.78*	-0.99
	SD	12.5	15.3	11.8	11.9	11.6	11.9	11.6	13.8	13.1	CA, CT>CO>NC					
Pre-Math	MEAN	99.2	103.1	99.0	105.9	109.3	111.9	97.7	98.1	102.4	18.69***	5.29*	1.43	-9.99***	-1.55	-2.16
	SD	13.5	12.8	15.1	11.4	15.1	8.8	12.7	11.1	13.6	CT>Others CT, CO>NC	P>NP				
ATTITUDES/ PERCEPTIONS	MEAN	4.3	4.3	4.3	4.4	4.3	4.4	4.3	4.2	4.4	0.75	0.80	1.15	-0.26*	0.13	-0.04
	SD	0.7	0.6	0.6	0.6	0.6	0.5	0.7	0.7	0.6						
CBI Positive Behavior	MEAN	3.7	3.7	3.6	3.6	3.6	3.7	3.5	3.6	3.6	0.26	0.31	0.04	-0.15	-0.33	-0.08
	SD	0.6	0.8	0.7	0.6	0.8	0.7	0.7	0.7	0.7						
Sociability	MEAN	4.0	4.0	4.0	3.9	4.0	4.0	4.0	3.8	4.0	0.57	0.60	0.49	0.02	-0.34	-0.07
	SD	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.8	0.7						
Problem Behavior	MEAN	2.4	2.2	2.5	2.4	2.3	2.4	2.7	2.6	2.4	1.96	0.13	1.30	0.15	0.23	-0.04
	SD	0.9	0.8	0.9	0.8	0.9	0.9	0.9	0.9	0.9						
STRS Positive Factor	MEAN	4.1	4.2	4.1	4.1	4.1	4.3	4.3	4.1	4.2	0.79	0.04	0.93	-0.03	-0.31	-0.03
	SD	0.7	0.6	0.5	0.6	0.7	0.6	0.7	0.7	0.6						
Negative Factor	MEAN	2.0	1.9	2.2	2.0	2.0	2.0	2.2	2.1	2.1	1.92	0.54	1.27	0.15	0.35	0.12
	SD	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.6	0.6						
MATERNAL EDUCATION	MEAN	14.2	15.4	14.2	14.5	13.7	14.8	13.7	13.2	14.2	6.85***	4.87*	3.23*	-2.18***	-0.28	-0.90***
	SD	2.1	2.5	2.4	2.2	2.1	2.3	2.2	1.9	2.3	CA>CO,CT>NC	P>NP	CA,CT:P>NP NC:NP>P			
CLASSROOM QUALITY	N	27	14	23	24	17	25	24	18	172						
	MEAN	4.4	4.3	3.8	3.9	4.2	4.4	4.1	3.0	4.0	8.10***	1.74	4.85**	-0.55	-0.95	-0.72**
	SD	0.9	0.8	0.9	0.7	0.7	0.9	0.9	0.9	0.9	CA, CT>CO,NC		NC:NP>P			

Note: ***p<.001
**p<.01
*p<.05

%Subsidized=% of enrollment that is subsidized
%Infant=% of enrollment that is infants/toddlers
SA Care=Care of school-aged children

Chapter 10

Parents as Child Care Consumers

by DEBBY CRYER & MARGARET BURCHINAL

This chapter examines characteristics of parents as child care consumers with regard to the relation between the domains of Family and Finances as described in the Conceptual Structure Model in Chapter 2. The child care related values of parents with children in a subsample of the observed classrooms in the study are reported as well as parents' ratings of the quality of the classrooms. Parents' ratings are compared to observer ratings for each aspect of care. Differences between observer and parent ratings are related to parents' values and the relative ease of monitoring the various aspects of care that are assessed.

The parent data referred to in this chapter come from one of two parent questionnaires--the Preschool Parent Questionnaire (ECERSPQ) adapted from the Early Childhood Environment Rating Scale (Harms & Clifford, 1980) and the Infant/Toddler Parent Questionnaire (ITERSPQ) adapted from the Infant/Toddler Environment Rating Scale (Harms, et al., 1990). Observer data come from the ECERS and ITERS. All instruments are described in Chapter 3.

SAMPLE

CLASSROOMS

The sample for this component of the study includes only those classrooms where parents returned questionnaires. Of the 228 infant/toddler classrooms in the total sample, 173 (76%) are represented with parent questionnaires, while for the preschool classrooms, 409 of 521 classrooms (78%) are represented.

The sample of classrooms included in this component of the larger study have somewhat higher observed quality scores than classrooms in the total sample. A T-test comparison of ITERS and ECERS quality for classrooms with and without returned Parent Questionnaires found small but significant differences (infant/toddler $t(226) = -2.49$, $p < .02$; preschool $t(519) = -2.56$, $p < .02$).

The estimated number of parent questionnaires distributed in all infant/toddler groups was 1308, with a total of 727, or 56%, returned. The estimated number of parent questionnaires distributed in all preschool groups was 7711, with a total of 2407, or 31%, returned. In infant/toddler classrooms where questionnaires were returned, the average number of responses received was 4.2 responses per room while in the preschool groups the average was 5.9 responses per room.

PARENT DEMOGRAPHIC INFORMATION

A summary of the demographic characteristics of respondents is shown in Table 10.1. In both the infant/toddler and preschool groups, the sample of parents was generally a well-educated group with reported incomes higher than the median household income for each state (U.S. Department of Commerce, 1993). The parent sample included a somewhat lower percentage of families who receive subsidized care. The correlation between the proportion of parents reporting that they received a subsidy and the proportion of center parents reported by the director to be receiving a subsidy was only moderate with the proportion of parents that the director indicated received a subsidy, there was only moderate agreement (r=.63).

RESULTS

PARENTAL VALUES

To examine parents' values for various aspects of child care, parents were asked to indicate the importance of each item on the Parent Questionnaire using a scale ranging from 1, indicating "not important" to 3, "very important." Means for each item were calculated, as well as item ranges and standard deviations. These figures are shown for the ITERSPQ in Table 10.2 and for the ECERSPQ in Table 10.3.

For the ITERSPQ almost all items had a range of 1 to 3. The eight exceptions had a range of 2 to 3. For the ECERSPQ, all items had a range of 1 to 3. In general, all items for both infant/toddler and preschool questionnaires received high importance scores, with no mean score for any item under 2.25. The mean total score for all items on the ITERSPQ was a 2.84 out of a possible 3. The mean total score for all items on the ECERSPQ was a 2.79 out of a possible 3.

To test the relative value parents placed on the different aspects of care listed in the parent questionnaire, items were categorized by type according to whether they related primarily to health, safety, interactions with or among children or other aspects (primarily curriculum and adult needs related requirements). Median parent value scores for each type of item were calculated as shown in Table 10.4. Item groups were compared using a non-parametric Matched Pairs Signed Rank Test, which compared the differences in ranks of parent values scores and the observer quality scores (see Table 10.5). For the infant/toddler group, parents valued the Interaction and Health items equally and most highly, followed by Safety, and finally the Other items. Parents with children in preschool groups valued the Safety items most highly, which were closely followed by Interactions, then Health and finally the Other items.

MANOVAS were used to compare parents' child care-related value ratings to see whether the overall scores varied as a function of state, auspice and program scope. Significant overall differences for the infant/toddler group related to state, $F(15, 1965)=2.37$, $p<.01$), the percent of subsidized children in the center, $F(5, 712)=3.09$, $p<.01$) and the percent of infants/toddlers in the center $F(5, 712)=3.24$, $p<.01$). Significant overall differences for the preschool group related to state, $F(15, 6595)=3.69$, $p<.0001$), auspice, $F(5, 2389)=4.22$, $p<.001$), and the percent of subsidized children in the center, $F(5, 2389)=16.29$, $p<.0001$).

Table 10.6 presents mean scores for parents' child care related values by state and sector as well as the analysis of variance and covariance tests of significance. For the infant/toddler group, the importance parents placed on the aspects of child care assessed in the ITERS were similar across states and sector except parents in Connecticut valued the interaction group of items more highly than did parents in Colorado. For preschool parents there was more variation in child care values. Parents of preschoolers in North Carolina valued the health items more highly than parents in California, Connecticut and Colorado. Parents in California also valued the health items more highly than parents in Connecticut. Parents in nonprofit centers indicated higher importance for the "other" type items and for all items than did parents of children in for-profit centers.

Table 10.6 reports analysis of co-variance tests of the relation of program scope variables to parents' child care related values. For the infant/toddler group, parents using programs with a smaller percent of infants/toddlers were found to value the interaction and "other" type items, as well as all items, more highly than parents with children in programs serving a higher percent of infants/toddlers. For the preschool group, parents in centers enrolling a higher percent of subsidized children indicated higher values for the health, safety, and other type items, as well as all items.

To examine whether parents placed their children in programs where their relative ECE values were reflected in observer quality scores on the ITERS and ECERS, a comparison of ranks was used. Table 10.7 shows the mean quality scores for the item types as assessed by trained observers. Parent values for the item types were ranked by mean importance score and compared to the ranks of the quality scores for these item types provided by trained observers (shown in Table 10.8). For the infant/toddler group, the comparison of ranks indicate some differences. Parents valued health (2.92) items very highly, but observed health item scores were the lowest mean score of all the item types. In the preschool group, the match between the importance parents place on the different aspects of care and the observed quality scores was better, with the item types that parents value most receiving higher observer scores. It should be noted that the mean observer quality scores were poor to mediocre for every aspect of care, with ITERS scores hovering around the minimal (3) level, and ECERS scores somewhat higher, but not reaching a level that is considered by professionals to be good (5).

COMPARISON OF PARENT AND OBSERVER CLASSROOM QUALITY RATINGS

To collect program quality assessment information from parents, parents were instructed to score the items on the Parent Questionnaire by how well their child's classroom did on each. Score possibilities ranged from 1 (not well) to 7 (very well); a "Don't Know" response was also possible. Scores for types of items (health, safety, interactions, other and all) were calculated as well as scores for more and less easily monitored items.

MANOVAS compared parents' quality scores to see whether the overall scores varied as a function of state, sector and program scope. There were significant overall state-level differences for the infant/toddler group, F(21, 2016)=3.03, p<.0001). For the preschool group, there were significant differences related to State, F(21, 6800)=4.08, p<.0001), Sector, F(7, 2368)=4.27, p<.0001), State x Auspice , F(21, 6800)=3.28, p<.0001), percent of subsidized children, F(7, 2368)=11.13, p<.0001), percent of infant/toddlers, F(7, 2368)=3.39, p<.01), and whether the center offered school-age child care, F(7, 2368)=3.24, p<.01).

An analysis of variance procedure was used to test whether parents' quality ratings varied as a function of state and sector. The results are shown in Table 10.9. For the infant/toddler group, parents in Connecticut consistently scored the quality of their children's care more highly on all the item groups than did parents in California, Colorado, and North Carolina. Preschool parents in California and Connecticut scored the quality of their children's programs higher than parents in Colorado and North Carolina on the safety, interaction, other, more easily, and less easily monitored types of items, and their ratings were significantly higher on all the items. Connecticut parents scored the quality of the health type items higher than parents in California, who scored them higher than parents in Colorado. North Carolina parents' scores on the health items did not differ from those of parents in the other three states. For all groups of items, parents with preschool children in nonprofit centers gave higher quality ratings than parents with children in for-profit centers. An interaction between state and sector was found for the "interaction" items. Parents in North Carolina gave higher quality ratings to nonprofit centers than to for-profit centers.

Analysis of co-variance was used to examine the relation of program scope variables to parents' quality scores (see Table 10.9). For the infant/toddler group none of the program scope variables was found to relate to parents' quality ratings. For the preschool group, parents' quality scores were higher for centers enrolling more subsidized children for every group of items except interactions. Their quality ratings were lower on all groups of items for centers with higher percentages of infants/toddlers and school-aged children.

Classroom quality assessments by parents were compared with those of trained observers using a mixed models analysis, which controls for multiple responses within a classroom (Laird & Ware, 1982; McLean, Sanders, & Stroup, 1991). For the infant/toddler group, the mean parent quality score was 6.1 while the trained observer mean was 3.5. The parent mean for the preschool group was 6.0, while the observer mean was 4,3. The quality ratings by trained observers and parent questionnaire respondents for all infant/toddler and preschool items are shown in Table 10.10. For both groups significant differences were found (infant/toddler t(950)=41.84 p<.0001, effect size=3.25; preschool t(2924)=45.74 p>.0001, effect size=2.32).

In general, a majority of parents scored the quality of their child's program within a range of five to seven. In fact, 90% of all preschool parents and 91% of all infant/toddler parents scored their children's programs in the developmentally appropriate range (5-7). No prominent linear trend appeared in the data to indicate that parents consistently give lower scores to programs given lower quality scores by trained observers. Parent scores are in accord with observer scores primarily when respondents had children who were in high quality programs. When children were in mediocre or poor scoring programs, respondents continued to assign high scores to those classrooms also.

The question of whether parents assessed programs of lower quality differently than programs of higher quality was examined. It is possible that the difference between the scores provided by questionnaire respondents and trained observers might have been due to parents' use of a more restricted scale when assessing their children's care, which did not include the lowest scores used by the trained observers. In other words, parents with children in low quality care might have accurately scored their children's programs with lower scores than parents with children in high quality care, but they might have only used the upper portion (5-7) of the seven point scale in their assessment process. To examine this possibility, classrooms were divided into quartiles based on trained observers' ITERS and ECERS scores. The mean parent quality score was then calculated for the classrooms in each quartile and compared to ascertain whether there were any differences in how parents with children in each quartile scored their children's programs. A mixed model was used for the ANOVA to adjust for multiple parent responses per classroom.

The overall ANOVA showed significant differences for both infant/toddler ($F(3,551)=3.60$ $p<.02$) and preschool ($F(3,2401)=14.71$ $p<.001$) comparisons. Upon completing subsequent pairwise comparisons (see Table 10.11) it was found that some parents do appear to differentiate the quality of care their children receive while others do not. It should be noted that the effect sizes are relatively small for these differences. Parents with children in the lowest quality infant/toddler groups rated the quality of their children's classrooms at a slightly, but significantly, lower level than parents with children in the highest quality classrooms. However, there are no significant differences between the parents' scores in any of the other quality quartiles.

Similarly, parents of children in the highest quality preschool quartile rate the quality of their children's care at a modestly, but significantly, higher level than parents with children in classrooms in the three lower quality quartiles. However, there are no significant differences in quality ratings for parents with children in the three lower scoring quartiles. When a correlational analysis was used to examine the relationship between mean parent score and observer score in each classroom, only modest correlation coefficients were found for both infant/toddler scores ($r=.21,p=.0049$) and preschool scores ($r=.29,p=.0001$).

RELATIONSHIP BETWEEN EASE OF MONITORING AND DIFFERENCES IN OBSERVER AND PARENT QUALITY SCORES

To examine whether the differences between parents' quality ratings and observers' ratings were lower when parents were assessing aspects of care which they could more easily monitor, two groups of ITERS and ECERS items were created (more easily monitored and less easily monitored). The two groups were based on the relative number of "Don't Know" responses parents provided when assessing the quality of their children's classrooms. The items included in each group are shown in Table 10.12.

In assessing their children's programs, parents had the option of providing a quality score of one to seven, or they could indicate that they were not able to assess the item by selecting "Don't Know." The number of "Don't Know" responses varied considerably. The ten items with the highest percentage of "Don't Know" responses were placed into the least easily monitored group, while the ten items with the least frequent "Don't Know" responses were placed into the most easily monitored group.

Differences in parent and observer quality scores were calculated for each group. These differences [More easily monitored parent score minus observer score]-[Less easily monitored parent score minus observer score] were then compared using a mixed models analysis, and fit an intercept-only model to estimate the mean difference score and test whether the intercept was 0.

For the infant/toddler group, the test indicated that the difference between parent and observer scores was significantly lower when assessing the items classified as more easily monitored (t(546)=-5.52 p<.001, effect size=-.63). For the preschool group, the test also indicated that the difference between parent and observer scores was slightly, but significantly, lower when assessing the items classified as more easily monitored than less easily monitored (t(2386)=-5.56 p<.001, effect size=-.31).

RELATIONSHIP BETWEEN PARENTAL VALUES AND QUALITY RATINGS

A mixed model analysis was performed to test whether the differences between parent and observer assessments of quality were related to parental values for the various aspects of care. The parent and observer quality rating difference score [(Parent Quality Score) - (ECERS/ITERS Observer Score)] was used as the dependent variable, parental importance ratings were used as the independent variable and a slope of 0 implied no relationship between the parent importance ratings and the parent/observer difference scores. For both infant/toddler and preschool groups, there was a significant relationship between parent importance scores and the difference between parent and observer quality scores. Both sets of results indicated that the parent quality scores were on average significantly higher than the observer quality scores; and as the parent importance scores increased, the difference between parent and observer scores also increased significantly (see Table 10.13). More specifically, for the infant/toddler group, as parent importance scores increased by one point, the difference between parent and observer quality scores increased by .84. For the preschool group, as the importance scores increased by one point, then the difference between parent and observer quality scores tended to increase by 1.03.

DISCUSSION

Today, in the United States, the importance of parents as the primary decision makers in child care is generally accepted. Our society depends on parents to be discriminating consumers of child care and relies on them to act as informal monitors of program quality. However, the concept of parents as consumers who can make informed choices to maximize children's opportunities for positive development is controversial.

Recent assessments of child care programs by early childhood professionals have indicated that many child care centers offer disturbingly low quality programs (Clifford, Russell, Fleming, Peisner, Harms, & Cryer, 1989; Cryer, Clifford, & Harms, 1988; Kisker, Hofferth, Phillips & Farquhar, 1991; Scarr, Eisenberg & Deater-Deckard, 1993; Whitebook, Howes & Phillips, 1989) which may well compromise the developmental needs of children (Burchinal, Nabors, Bryant & Roberts, 1994; Doherty,1991; Hayes, Palmer & Zaslow, 1990; Galinsky, Howes, Kontos & Shinn, 1994; Phillips, & Howes, 1987; Zaslow, 1991; Whitebook, et al., 1989). Yet, the majority of studies which examine parents' satisfaction with their child care arrangements indicate that only a minority of parents are dissatisfied (American Federation of State, County and Municipal Employees, 1987; Kontos & Wells, 1986; Whitehead, 1989; Willer, Hofferth, Kisker, Divine-Hawkins, Farquhar, & Glantz, 1991).

There are several possible explanations for the dichotomous relationship between parents' satisfaction and early childhood professionals' assessments of quality. First, one might assume that parents are well informed about the quality of care their children receive, but do not prioritize their values in the same way that early childhood professionals do, placing cost and convenience above more child-related aspects of care such as health, safety or warm interactions (Hofferth, 1991; Kisker & Maynard, 1991). Thus they would be satisfied with the care they purchased because it matches their values, and they would have no reason to demand higher quality from the child care market.

A second explaination of parents' satisfaction with programs that early childhood professionals consider to be of low quality is that even though parents value the same aspects of care that early childhood professionals do (Browne Miller, 1990; Mitchell, Cooperstein & Larner, 1992) they are not well-informed about the care their children receive (Browne Miller, 1990; Cryer, 1989; Fleming, 1989; Shinn, Phillips, Galinsky & Whitebook, 1990). They may think that their values are represented in the child care they purchase and be unable to judge the actual quality of services. In economic terms, the parents would thus be consumers who make judgements based on imperfect information about the product they are purchasing (Walker, 1991). If this explanation is correct, then parents' inadequate information could partially account for their apparent satisfaction with the poor performance or low quality of child care programs (Weisbrod, 1988). The results of this study provide some support for this second assumption.

PARENTS' CHILD CARE RELATED VALUES

In interpreting the results of this study it is important to remember the characteristics of the parents in the sample that responded to the parent questionnaires. On the whole, the sample is generally a well-educated group with incomes that are higher than the median household income for each state. Considering the characteristics of the sample, one might expect the parents in this study to be reasonably well-informed consumers who are able to match the products they purchase to their values. First, findings from the present study indicate that parents-report high importance for the majority of criteria which early childhood professionals believe to constitute high quality child care. Because parents were asked to rate the importance of criteria with specific descriptors attached, the finding is more definitive than in past studies (Browne Miller, 1990; Shinn, M., Phillips, D., Howes, C., Galinsky, E. & Whitebook, M. ,1990) where the same aspects of quality were not tightly defined for both parents and professionals. In fact, when given explicit requirements for the criteria that are generally found in professional definitions of high quality early childhood programs parents reported high importance for almost all.

Parents' child care related values appear to be relatively consistent across state and auspice. For the infant/toddler group, only two sets of difference were found. Parents in Connecticut reported valuing more highly the interaction type items than parents in Colorado, and parents with infants/toddlers in centers enrolling fewer infants/toddlers valued interaction, "other" and all items more highly than parents with children in centers enrolling a higher percent of these young children. Parents of preschoolers were not quite as consistent across state and auspice in their child care related values as parents of infants/toddlers. Parents of preschoolers in North Carolina gave higher importance ratings to the health type items while parents of preschoolers in nonprofit centers gave higher scores for the "other" type items and also all the items. It appears that parents of preschoolers in centers that have a higher percent of subsidized children value all types of items, except the interaction group, more highly than parents in centers with fewer subsidized children. It should be noted that examination of the differences in means for the groups of parents are truly very small and may not be meaningful in real terms.

With ECE parental values in mind, the performance of the early childhood programs on these aspects of care must be considered to ascertain whether parents' values are well matched to the care they purchase. For the parents of infants and toddlers there appears to be a mismatch. Although parents valued the health aspects of care highly, the average center scored at just a minimal level when assessed by trained observers. Specifically, the health-related items of Diapering/toileting, Meals/snacks and Health practice were three of the four lowest scoring items assessed by observers. Requirements for safety were met somewhat more successfully, but Interaction type items did not meet even a good standard in the average program.

For preschool classrooms, the match between parental values and program performance appeared to be somewhat better. The preschool parents valued the Safety-related items most highly, and indeed, these items were assessed at a higher quality level than others, almost meeting the requirements for good quality in the average program. The Health and Interactions type items, although not assessed at as high a level as Safety, are also found to be slightly better than minimal in the average program.

PARENTS' PERCEPTIONS OF THEIR CHILD CARE

Parents' child care related values are rather consistent across state, sector and program scope variables. The ratings of their child care quality were less similar. Almost all parents gave high ratings for the quality of their children's classrooms. However, there was less difference in the ratings given by parents of infants/toddlers than parents of preschoolers. There were no differences by sector in the quality ratings of parents of infants/toddlers, but parents in Connecticut rated the quality of their children's care higher than parents in the other three states. Parents in North Carolina, the state with the lowest observed infant/toddler process quality scores, did not rate the quality of their children's care lower than parents in California and Colorado. State, sector, and program scope differences were found in the comparison of quality ratings by parents of preschoolers. Parents in California and Connecticut generally reported higher quality ratings than parents in Colorado and North Carolina, and parents with children in nonprofit centers consistently reported higher quality than parents from for-profit centers.

The mismatch between what parents value for their children in early childhood programs and what they actually purchase is likely to be related to imperfections in the ECE market place, and specifically to the presence of "asymmetric information" as discussed in Chapter 2 of this report. The results of this analysis support this theory. When parents were asked to assess the quality of their children's early childhood programs on the same explicitly defined dimensions for which they had provided value ratings, and these quality ratings were subsequently compared to scores of trained observers on those same dimensions, it was found that parents scored the quality of the services their children received significantly higher than did the trained observers. Parents of infants and toddlers appeared to differentiate between programs that were of the highest quality and of the lowest quality at the ends of the continuum, but they did not appear to differentiate between programs in between, ranging from less than minimal quality to excellent. Parents of preschoolers appeared to differentiate inadequate to good programs from programs of good to excellent quality, but did not differentiate programs that ranged from inadequate to good. Yet, it cannot be forgotten that, on the whole, the vast majority of parents reported that their children's programs did "very well" on most of the aspects of care they assessed while the average program was not assessed similarly by outside observers.

Walker (1991) hypothesizes that the lack of consumer knowledge about what is being purchased is the factor which most separates the child care market from an efficient market and increases the likelihood of a poor quality supply. Evidence for this is shown in results of the comparison of parent and observer quality scores for more and less easily monitored groups of items. Smaller differences between parent and observer quality scores were found for both the infant/toddler and preschool groups in the more easily monitored items.

The role that parental values play in parents' monitoring of the care their children receive also appears to be a likely prospect for explaining market imperfections. One might assume that parents would assess more accurately those dimensions of care which they valued more highly. Yet the findings from the present study seem to indicate the opposite, namely that as parents value a dimension of care more highly, the difference between their quality rating for that dimension and the rating of an outside observer actually increases.

CONCLUSIONS

- Parents valued highly those aspects of child care which early childhood professionals believe to be necessary components of high quality care, yet their children were generally not enrolled in programs which reflected these values.

- Parents significantly overestimated the quality of care their children received. This was demonstrated by comparing parent quality scores with trained observer scores on the same aspects of care.

- It appeared that parents were hindered in acting as well-informed consumers of child care. This appeared to be related to parents' own values and to the difficulty of monitoring the care their children actually experienced. The difference between parent and observer quality scores increased with the importance to the parent of the aspect of care. The difference between parent and observer quality scores increased for aspects of care that were difficult for parents to observe or monitor.

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Table 10.1

Demographic Characteristics of Respondents to ITERS/ECERS Parent Questionnaires

	Infant/Toddler (N = 727)	Preschool (N = 2407)
RELATIONSHIP TO CHILD, %		
Mother	90	85
Father	6	8
Other	4	2
RACE, %		
White	81	71
Non-White	18	27
African-American	8	11
Hispanic	4	7
Asian or Pacific	2.5	4
Native American	1.5	2
MARITAL STATUS, %		
Married	78	70
Single	20	28
No Response	2	2
EDUCATION COMPLETED, %		
No High School	1.1	0.4
Some High School	3.7	2.3
High School Degree	11.7	14.5
Some College	21.7	26.1
2-year Degree	10.5	12.6
4-year Degree	25.6	20.6
Some Graduate Work	8.9	7.9
Graduate Degree	16.4	14.4
No Response	0.4	1.1
AGE IN YEARS		
Mean	31	33.5
Range	15-78	19-68
ANNUAL FAMILY INCOME		
Mean	$57,134	$56,797
Median	$55,000	$50,000
Range	$272-$350,000	$600-$638,013

Table 10.2
Mean Parent Importance Scores for ITERSPQ Items*

Item Number and Title	N	Range	M	SD
1. Furnishings for routine care	723	1-3	2.90	.30
2. Use of furn. for learning	727	2-3	2.90	.30
3. Furn. for relax. and comfort	725	1-3	2.70	.47
4. Room arrangement (a)	725	2-3	2.95	.22
4. Room arrangement (b)	725	2-3	2.78	.42
5. Display for children (a)	723	1-3	2.64	.51
5. Display for children (b)	719	1-3	2.48	.57
6. Greeting/departing	724	2-3	2.98	.14
7. Meals/snacks (a)	722	2-3	2.96	.19
7. Meals/snacks (b)	718	1-3	2.87	.34
8. Nap	719	1-3	2.87	.34
9. Diapering/toileting (a)	724	1-3	2.96	.20
9. Diapering/toileting (b)	704	1-3	2.90	.32
10. Personal grooming	719	1-3	2.84	.38
11. Health practice (a)	725	1-3	2.97	.18
11. Health practice (b)	720	1-3	2.74	.47
12. Health policy (a)	718	1-3	2.94	.24
12. Health policy (b)	717	1-3	2.95	.23
13. Safety practice (a)	714	2-3	2.97	.17
13. Safety practice (b)	714	1-3	2.95	.22
14. Safety policy	708	1-3	2.98	.17
15. Informal use of language	719	1-3	2.98	.17
16. Books and pictures	717	1-3	2.88	.34
17. Eye-hand Coordination	718	1-3	2.89	.31
18. Active physical play	717	1-3	2.92	.29
19. Art	694	1-3	2.83	.41
20. Music and movement	709	1-3	2.72	.48
21. Blocks	704	1-3	2.70	.49
22. Pretend play	692	1-3	2.70	.51
23. Sand and water play	691	1-3	2.48	.61
24. Cultural awareness	694	1-3	2.53	.59
25. Peer interaction	713	2-3	2.96	.19
26. Caregiver-child interaction	716	2-3	2.99	.12
27. Discipline (a)	719	1-3	2.98	.15
27. Discipline (b)	717	1-3	2.97	.20
28. Schedule of daily activities	715	1-3	2.85	.37
29. Supervision of daily acts. (a)	720	1-3	2.97	.19
29. Supervision of daily acts. (b)	716	1-3	2.96	.20
30. Staff cooperation	715	1-3	2.82	.40
31. Prov. for except. child.	652	1-3	2.70	.58
32. Adult personal needs	703	1-3	2.75	.47
33. Oppor. professional growth	697	1-3	2.85	.37
34. Adult meeting areas	707	1-3	2.41	.64
35. Provisions for parents (a)	720	1-3	2.91	.29
35. Provisions for parents (b)	715	1-3	2.71	.50

*Based on a 1-3 scale, with 1 indicating "not important" and 3 indicating "very important."

Table 10.3
Mean Parent Importance Scores for ECERSPQ Items*

Item Number and Title	N	Range	M	SD
1. Greeting/departing	2397	1-3	2.92	.28
2. Meals/snacks (a)	2395	1-3	2.88	.34
2. Meals/snacks (b)	2379	1-3	2.73	.46
3. Nap/rest (a)	2336	1-3	2.82	.43
3. Nap/rest (b)	2300	1-3	2.71	.50
4. Diapering/toileting	2333	1-3	2.91	.32
5. Personal grooming	2381	1-3	2.87	.35
6. Furnishings for routine care (a)	2387	1-3	2.79	.42
6. Furnishings for routine care (b)	2386	1-3	2.88	.33
7. Furnishings for learning	2383	1-3	2.84	.37
8. Furnishings for relaxation	2374	1-3	2.57	.53
9. Room arrangement	2376	1-3	2.75	.45
10. Child related display (a)	2394	1-3	2.78	.43
10. Child related display (b)	2387	1-3	2.61	.51
11. Understanding language (a)	2389	1-3	2.95	.22
11. Understanding language (b)	2384	1-3	2.91	.29
12. Using language	2393	1-3	2.92	.27
13. Reasoning	2390	1-3	2.93	.26
14. Informal language	2361	1-3	2.89	.32
15. Fine motor (a)	2372	1-3	2.86	.35
15. Fine motor (b)	2368	1-3	2.83	.38
16. Supervision of fine motor	2365	1-3	2.89	.31
17. Gross motor space	2375	1-3	2.94	.24
18. Gross motor equipment (a)	2371	1-3	2.91	.30
18. Gross motor equipment (b)	2377	1-3	2.63	.51
19. Gross motor time	2374	1-3	2.84	.37
20. Supervision of gross motor	2382	1-3	2.93	.25
21. Art (a)	2368	1-3	2.75	.46
21. Art (b)	2372	1-3	2.80	.41
22. Music/movement	2380	1-3	2.70	.48
23. Blocks (a)	2370	1-3	2.51	.58
23. Blocks (b)	2335	1-3	2.28	.63
24. Sand/water	2344	1-3	2.25	.67
25. Dramatic play	2357	1-3	2.76	.46
26. Schedule for creative acts.	2360	1-3	2.92	.28
27. Supervision of creat. acts.	2357	1-3	2.95	.23
28. Space to be alone	2346	1-3	2.54	.58
29. Free play	2363	1-3	2.77	.44
30. Group time	2348	1-3	2.75	.47
31. Cultural awareness	2357	1-3	2.68	.52
32. Tone (a)	2371	1-3	2.96	.21
32. Tone (b)	2375	1-3	2.96	.20
33. Exceptional provisions	2188	1-3	2.70	.61
34. Adult personal area	2300	1-3	2.46	.64
35. Adult opportunities (a)	2296	1-3	2.88	.35
35. Adult opportunities (b)	2251	1-3	2.76	.46
36. Adult meeting area	2328	1-3	2.53	.60
37. Parent provisions	2353	1-3	2.86	.36

*Based on a 1-3 scale, with 1 indicating "not important" and 3 indicating "very important."

Table 10.4
Parent Importance Scores for ITERSPQ and ECERSPQ Items Classified by Type

Item Type	M	SD	Median
Infant/Toddler (N=727)			
Health	2.92	.15	3.00
Safety	2.88	.16	2.86
Interactions	2.93	.14	3.00
Other	2.73	.27	2.79
Total ITERSPQ	2.84	.17	2.89
Preschool (N=2405-2407)			
Health	2.86	.23	3.00
Safety	2.89	.19	3.00
Interactions	2.88	.19	3.00
Other	2.69	.27	2.72
Total ECERSPQ	2.79	.20	2.84

Table 10.5
Parent Values for ITERSPQ and ECERSPQ Items Matched Pairs Signed Rank Test*

Difference**	M	SD	Median	Signed Rank Statistic	p***
Infant/ Toddler					
Health vs. Safety	.042	.14	.00	13287.5	.0001
Health vs. Interactions	-.004	.15	.00	-261.0	.8293
Health vs. Other	.189	.22	.14	67098.5	.0001
Safety vs. Interactions	-.046	.14	.00	-13733.5	.0001
Safety vs. Other	.148	.20	.08	61191.5	.0001
Interactions vs. Other	.193	.21	.14	68162.0	.0001
Preschool					
Health vs. Safety	-.028	.20	.00	-73819.5	.0001
Health vs. Interactions	-.017	.22	.00	-39965.5	.0037
Health vs. Other	.174	.24	.16	795291.5	.0001
Safety vs. Interactions	.011	.17	.00	33273.0	.0008
Safety vs. Other	.201	.21	.17	942509.5	.0001
Interactions vs. Other	.191	.20	.17	936363.5	.0001

*Bonferroni correction for multiple comparisons: significance level 0/0.05/6=0.008
**Mean, Standard Deviation and Median are reported for the Difference Scores
***Note that very small differences are found to be highly significant due to large sample sizes.

Table 10.6
Comparison of Parents' Child Care Related Value Ratings

Item Types		MEANS BY STATE AND SECTOR									ANOVAS F-tests				ANCOVAS Std. Regress. Coeff.			
		CA		CO		CT		NC		Total	R^2	State	Sector	State x Sector	R^2	% Sub.	% Inf.	%SA Care
		NP	P	NP	P	NP	P	NP	P									
INFANT/ TODDLER	N	44	54	62	128	68	20	127	124	727								
Health	Mean	2.90	2.92	2.90	2.89	2.95	2.92	2.95	2.94	2.92	.02	3.64	.12	.83	.02	.03	-.06	.01
	SD	.18	.13	.16	.18	.10	.17	.11	.15	.15								
Safety	Mean	2.82	2.89	2.87	2.87	2.92	2.89	2.90	2.86	2.88	.02	2.26	0.00	3.10	.03	-.04	-.11	-.01
	SD	.19	.12	.18	.15	.12	.16	.14	.18	.16								
Interaction	Mean	2.87	2.94	2.90	2.91	2.96	2.95	2.94	2.92	2.93	.03	4.42* CT>CO	1.58	3.43	.05	-.02	-.17**	-.06
	SD	.18	.11	.19	.15	.08	.10	.11	.15	.14								
Other	Mean	2.68	2.72	2.69	2.70	2.78	2.70	2.79	2.75	2.73	.02	3.34	0.76	1.29	.04	.07	-.15*	-.03
	SD	.31	.27	.25	.29	.24	.27	.24	.25	.27								
All	Mean	2.81	2.86	2.83	2.84	2.90	2.86	2.89	2.86	2.86	.02	3.79	0.05	2.12	.04	.01	-.14*	-.02
	SD	.19	.15	.18	.18	.12	.15	.13	.17	.16								
PRESCHOOL	N	390-1	335	284	296	371-2	290	291	148	2405-7								
Health	Mean	2.88	2.85	2.84	2.87	2.84	2.82	2.92	2.90	2.86	.02	11.29*** NC> Others CA>CT	.71	1.76	.03	.12***	.02	-.01
	SD	.22	.21	.26	.22	.24	.26	.17	.18	.23								
Safety	Mean	2.91	2.89	2.89	2.87	2.88	2.88	2.91	2.89	2.89	.00	1.95	2.73	.40	.01	.07*	.02	-.01
	SD	.17	.17	.22	.19	.20	.21	.18	.21	.19								
Interaction	Mean	2.89	2.87	2.88	2.86	2.87	2.88	2.91	2.88	2.88	.01	1.30	4.74	.94	.01	.01	.05	-.02
	SD	.17	.17	.22	.21	.19	.19	.17	.19	.19								
Other	Mean	2.73	2.64	2.70	2.66	2.69	2.65	2.75	2.68	2.69	.02	2.44	26.14*** NP>P	1.80	.03	.13***	.01	-.02
	SD	.25	.27	.27	.27	.27	.27	.26	.27	.27								
All	Mean	2.83	2.78	2.81	2.78	2.79	2.79	2.84	2.80	2.80	.01	2.34	10.47* NP>P	1.12	.02	.10***	.03	-.02
	SD	.18	.18	.21	.20	.21	.20	.19	.20	.20								

* p<.01 ** p<.001 *** p<.0001

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Table 10.7
Observer Scores for ITERS and ECERS Items Classified by Type

Item Type	ITERS Mean	(SD)	ECERS Mean	(SD)
Health	3.16	(1.17)	4.30	(1.10)
Safety	3.58	(1.32)	4.72	(.95)
Interactions	3.96	(1.26)	4.33	(1.27)
Other	3.36	(.98)	4.02	(.99)

Table 10.8
Comparison of Ranks: Parent Values vs Trained Observer Quality Scores for ITERS/ECERS Item Types

Item Type	Mean Parent Importance Score*	Mean Observer Score**	Parent Score Rank	Observer Score Rank
Infant/Toddler				
Health	2.92	3.16	2	4
Safety	2.88	3.58	3	2
Interactions	2.93	3.96	1	1
Other	2.73	3.36	4	3
Preschool				
Health	2.86	4.30	3	3
Safety	2.89	4.72	1	1
Interactions	2.88	4.33	2	2
Other	2.69	4.25	4	4

*All parent means are significantly different when compared using Matched Pairs Signed Rank Test (p<.01) except Infant/Toddler Health vs. Interactions (p=.8293). Scores can range from 1-3.

**All observer means are significantly different when compared using Matched Pairs Signed Rank Test (p<.001) except Preschool Health vs. Interactions (p=.7635). Scores can range from 1-7.

Table 10.9
Comparison of Parents' Child Care Quality Ratings

		MEANS BY STATE AND AUSPICE									ANOVAS F-tests				ANCOVAS Std Regress Coeff			
		CA		CO		CT		NC		Total								
Item Types		NP	P	NP	P	NP	P	NP	P		R^2	State	Sector	State x Sector	R^2	% Sub	% Inf	%SA Care
INFANT/ TODDLER	N	42	54	61-2	126-8	68-9	120	124-7	122-3	719-24								
Health	Mean	5 90	5 87	5 98	6 05	6 44	6 21	6 20	5 98	6 10	04	7 20*** CT> Others	2 13	1 41	04	01	02	- 04
	SD	1 08	1 02	93	71	66	68	77	90	83								
Safety	Mean	5 87	5 88	5 99	5 99	6 44	6 11	6 15	5 84	6 04	05	6 82*** CT> Others	6 37	2 30	05	02	05	01
	SD	89	97	75	71	67	79	78	91	82								
Interaction	Mean	5 99	6 14	6 27	6 23	6 68	6 45	6 38	5 98	6 27	06	9 83*** CT> Others	3 24	2 98	06	04	- 03	- 06
	SD	97	97	87	83	46	60	70	1 14	86								
Other	Mean	5 73	5 68	5 84	5 83	6 35	5 94	6 09	5 73	5 91	05	6 69** CT> Others	9 07	2 62	06	07	- 03	- 01
	SD	98	1 07	71	86	63	82	81	90	86								
More Easily Monitored	Mean	5 90	5 92	5 98	5 98	6 38	6 10	6 15	5 83	6 03	04	5 29* CT> Others	5 11	2 14	04	03	03	- 04
	SD	1 03	93	71	70	65	68	70	93	79								
Less Easily Monitored	Mean	5 79	5 90	6 06	6 02	6 54	6 24	6 29	5 96	6 12	06	10 48*** CT> Others NC>CA	4 69	2 36	06	05	- 05	- 03
	SD	1 06	96	74	86	53	71	77	91	84								
All	Mean	5 87	5 92	6 03	6 04	6 49	6 21	6 22	5 91	6 10	05	9 83*** CT> Others	4 59	2 48	06	04	00	- 03
	SD	95	94	73	71	50	63	68	87	76								
PRESCHOOL	N	389-90	332-4	282-4	293-6	370-2	288-90	289-91	146-8	2388-2405								
Health	Mean	6 17	6 01	5 93	5 91	6 23	6 18	6 23	5 90	6 09	02	11 1*** CT> Others CA>CO	15 9*** NP>P	3 4	04	10***	- 08**	- 09***
	SD	84	84	97	87	81	82	81	96	87								
Safety	Mean	6 33	6 24	6 21	6 06	6 34	6 33	6 29	6 02	6 25	02	8 8*** CA, CT> CO, NC	14 5*** NP>P	2 6	03	07**	- 10***	09***
	SD	77	84	82	84	82	78	81	90	82								
Interaction	Mean	6 27	6 09	6 08	5 97	6 24	6 24	6 22	5 68	6 13	03	12 6*** CA, CT> CO, NC	30 8*** NP>P	8 2*** NC N>P	04	03	- 10***	- 10***
	SD	82	91	86	86	84	84	88	1 15	89								
Other	Mean	6 04	5 81	5 82	5 71	6 08	5 91	6 01	5 53	5 90	03	9 0*** CA, CT> CO, NC	44 4*** NP>P	3 7	05	11***	- 10***	- 10***
	SD	86	89	90	87	84	89	96	1 10	91								
More Easily Monitored	Mean	6 31	6 19	6 15	6 01	6 33	6 28	6 27	5 97	6 21	02	11 6*** CA, CT> CO, NC	22 2*** NP>P	2 4	04	06*	- 10***	- 10***
	SD	71	76	78	76	71	75	79	84	76								
Less Easily Monitored	Mean	6 05	5 85	5 84	5 77	6 08	5 99	5 98	5 40	5 91	03	12 4*** CA, CT> CO, NC	31 0*** NP>P	6 5*** NC N>P	05	10***	- 10***	- 10***
	SD	93	98	98	94	93	93	1 02	1 28	99								
All	Mean	6 20	6 04	6 02	5 93	6 23	6 18	6 18	5 78	6 10	03	11 4*** CA, CT> CO, NC	27 9*** NP>P	4 6** NC N>P	05	08***	- 10***	- 11***
	SD	76	80	81	78	75	77	80	95	80								

* p< 01
** p< 001
*** p< 0001

Table 10.10
Quality Ratings by Trained Observers and Parent Questionnaire Respondents

	Observer		Parent			Observer		Parent Score	
Infant/Toddler	Mean	SD	Mean	SD	**Preschool**	Mean	SD	Mean	SD
1. Furn. routine care	3.89	1.86	6.14	1.01	1. Greeting/departing	4.01	1.54	5.96	1.23
2. Use of furn./ learning	3.84	2.01	5.94	1.17	2. Meals/snacks (a)	3.87	1.61	6.25	1.10
3. Furn. /relax. & comf.	3.45	1.45	5.51	1.34	2. Meals/snacks (b)			6.13	1.07
4. Room arrang. (a)	3.27	1.75	5.88	1.24	3. Nap/rest (a)	4.40	1.70	6.40	0.96
4. Room arrang. (b)			5.90	1.19	3. Nap/rest (b)			6.05	1.29
5. Display for child. (a)	3.56	1.15	5.93	1.24	4. Diapering/toileting	4.20	2.05	6.13	1.20
5. Display for child. (b)			5.74	1.34	5. Personal grooming	3.87	1.43	5.89	1.27
6. Greeting/departing	4.46	1.49	6.31	1.16	6. Furn/routine care (a)	5.14	1.59	6.32	1.01
7. Meals/snacks (a)	2.53	1.85	6.26	1.07	6. Furn/routine care (b)			6.26	1.09
7. Meals/snacks (b)			6.15	1.10	7. Furn./ learning	4.38	1.68	6.53	0.83
8. Nap	3.53	2.10	6.17	1.05	8. Furnishings/relaxation	3.73	1.59	5.63	1.43
9. Diaper./toilet. (a)	2.38	1.89	6.20	1.18	9. Room arrangement	4.45	1.61	6.13	1.11
9. Diaper./toilet. (b)			6.17	1.11	10. Child rel. display (a)	3.82	1.25	6.32	1.05
10. Personal grooming	2.79	1.48	5.81	1.23	10. Child rel. display (b)			6.20	1.15
11. Health practice (a)	2.45	1.82	6.76	1.08	11. Understand. lang. (a)	4.57	1.38	6.49	0.89
11. Health practice (b)			5.91	1.29	11. Understand. lang. (b)			6.13	1.21
12. Health policy (a)	5.00	1.45	6.56	0.84	12. Using language	4.35	1.66	6.25	1.07
12. Health policy (b)			6.35	1.09	13. Reasoning	3.98	1.47	6.14	1.10
13. Safety practice (a)	3.12	2.04	6.31	1.01	14. Informal language	4.11	1.65	6.09	1.15
13. Safety practice (b)			6.24	1.13	15. Fine motor (a)	5.01	1.47	6.46	0.87
14. Safety policy	4.32	2.02	6.47	0.90	15. Fine motor (b)			6.24	1.07
15. Informal language	4.45	1.59	6.35	1.02	16. Supervision/ine motor	4.53	1.26	6.35	0.93
16. Books/pictures	2.74	2.01	6.10	1.21	17. Gross motor space	4.85	1.27	6.23	1.17
17. Eye-hand coord.	3.93	1.57	6.32	0.95	18. Gross motor equip.(a)	4.30	1.22	6.27	1.10
18. Active physical play	3.49	1.55	6.19	1.10	18. Gross motor equip.(b)			5.88	1.23
19. Art	3.25	1.52	6.45	1.01	19. Gross motor time	5.18	1.00	6.17	1.07
20. Music/movement	3.04	1.39	6.03	1.23	20. Supervision/GM	4.75	1.25	6.14	1.19
21. Blocks	2.87	1.43	6.02	1.16	21. Art (a)	3.47	1.89	6.12	1.21
22. Pretend play	2.70	1.69	6.00	1.19	21. Art (b)			6.22	1.14
23. Sand/water play	2.78	1.95	5.85	1.42	22. Music/movement	4.93	1.41	5.92	1.32
24. Cultural awareness	1.95	1.15	5.41	1.52	23. Blocks (a)	4.04	1.92	5.86	1.24
25. Peer interaction	4.48	1.61	6.36	1.00	23. Blocks (b)			5.73	1.28
26. Caregiver-child inter.	4.01	1.87	6.45	0.97	24. Sand/water	4.32	1.67	5.53	1.52
27. Discipline (a)	4.54	1.70	6.57	0.77	25. Dramatic play	3.40	1.27	6.10	1.20
27. Discipline (b)			6.41	0.91	26. Sched./creative acts.	4.83	1.31	6.57	0.82
28. Schedule daily activ.	3.42	1.64	6.26	1.06	27. Supervis./creat. acts.	5.09	1.42	6.27	1.10
29. Supervis/activities. (a)	3.78	2.02	6.21	1.03	28. Space to be alone	3.00	1.38	5.48	1.50
29. Supervis/activities (b)			6.36	0.95	29. Free play	4.31	1.71	6.15	1.08
30. Staff cooperation	4.25	1.45	6.33	1.01	30. Group time	4.36	1.58	5.97	1.23
31. Prov. except. child	4.14	2.00	6.28	1.03	31. Cultural awareness	2.72	1.53	5.82	1.39
32. Adult personal needs	3.38	1.66	5.56	1.58	32. Tone (a)	4.60	1.46	6.35	1.10
33. Oppor. prof. growth	2.98	1.58	5.96	1.42	32. Tone (b)			6.35	1.03
34. Adult meeting areas	3.88	1.96	4.96	1.86	33. Exceptional prov.	4.02	1.99	6.07	1.30
35. Provisions/parents (a)	4.06	1.23	6.51	0.96	34. Adult personal area	3.94	1.91	5.32	1.76
35. Provisions/parents (b)			5.20	1.80	35. Adult opportunities (a)	3.69	1.76	5.87	1.48
					35. Adult opportunities (b)			5.67	1.65
					36. Adult meeting area	4.29	1.88	5.25	1.76
					37. Parent provisions	4.77	1.18	5.77	1.57

Table 10.11
Pairwise Comparison of Parent Quality Scores by Classroom Quality Quartile as Assessed by Trained Observer

Group	Quartiles	df	F	p	Effect size
Infant/toddler	Highest vs. Lowest	1, 551	8.74	.0033	.37
Preschool	Highest vs. 3rd	1, 2401	20.21	<.001	.37
	Highest vs. 2nd	1, 2401	29.31	<.001	.46
	Highest vs. Lowest	1, 2401	30.97	<.001	.48

Table 10.12
List of ITERS/ECERS Items Classified by Parent's Most and Least Frequent "Don't Know" Responses

	More Easily Monitored	Less Easily Monitored
ITERS	Greeting/departing	Health policy
	Room arrangement	Music and movement
	Furnishings for routine care	Blocks
	Display for children	Staff cooperation
	Adult-child interaction	Art
	Furn. for relax. and comfort	Safety practice
	Use of furn. for learning	Pretend play
	Diapering/toileting	Safety policy
	Health practice	Sand and water play
	Peer interaction	Cultural awareness
ITERS	Greeting/departing	Music/movement
	Child related display	Informal language
	Furnishings for learning	Art
	Gross motor space	Supervision of fine motor
	Furnishings for routine care	Reasoning
	Gross motor equipment	Group time
	Tone	Space to be alone
	Personal grooming	Blocks
	Room arrangement	Sand/water
	Schedule for creative acts.	Cultural awareness

Table 10.13
Mixed Model Analyses Relating Difference Between Parent and Observer Classroom Quality Ratings to Parent Importance Scores

Parameter	Estimate	Std. Error	df	T	p
Infant/Toddler Solution for Fixed Effects					
Adjusted Mean Difference (Intercept)	.09	.54	550	.17	.86
Parent Importance (Slope)	.84	.19	550	4.50	<.001
Preschool Solution for Fixed Effects					
Adjusted Mean Difference (Intercept)	-1.21	.23	2403	-5.24	<.001
Parent Importance (Slope)	1.03	.08	2403	12.77	<.001

Chapter 11

Within Sector Comparisons and the Impact of Government Spending

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OVERVIEW

Results reported in this chapter compare center characteristics by auspice within the nonprofit and for-profit sectors. They also compare characteristics of centers (1) based on whether or not they received substantial government funding and on the type of government support received; (2) whether or not public funding was tied to special regulations; and (3) whether or not they were subsidized worksite centers. For each of these analyses four sets of center characteristics are compared: structure; wages, personnel policy; structure and process quality and staff characteristics; and cost, revenue, subsidies, and fees.

BREAKDOWN OF THE SAMPLE

Directors were asked to classify their center based on how the operator of the center was organized. For nonprofit centers they were asked to choose among several categories, including church, affiliated with but not operated by a church, independent nonprofit center. The analysis in this chapter uses the designations provided by the director although not all directors of religious-affiliated centers classified their center as a church-related center, for instance, if they were part of a Jewish community center or operated by a Catholic religious order.

Nonprofit centers were separated into three categories or auspices: (1) 78 church-affiliated centers which were either operated by or affiliated but not operated by churches; (2) 28 publicly operated centers owned and operated by municipalities or schools or colleges; and (3) 97 other private nonprofit centers identified as independent nonprofits, because they were either completely independent of any other organization or sponsored by some nongovernmental community organization other than a church. Two centers that served special needs children were eliminated from the financial analysis because of their extraordinarily high costs per child.

For-profit centers were separated into three auspices: (1) 128 independently owned, (2) 25 centers which belonged to local systems of 2 or more centers, (3) 48 centers which were part of national systems of centers.

Three types of publicly supported centers were compared with the remaining centers in the sample. Centers were separated into three groups that overlap the ownership categories listed above: (1) the 28 publicly owned centers (the same public centers as above in the classification by auspice); (2) 29 privately owned centers (both nonprofit and for-profit) that received more than half of their revenues from state reimbursement of fees for subsidized children; and (3) 17 privately owned centers that received more than half of their revenue from public sources, and at least 10% of total revenue came from grants or funding of special services other than straight child care reimbursement.

Most of the publicly supported centers served mainly poor or at-risk children; however, some public auspices in the sample were in colleges and served middle-class children. Centers more dependent on state reimbursement of fees were separated from other private centers with large public revenue sources. The 50% and 10% public funding cutoffs were chosen both for intuitive reasons and because statistical tests suggest that they may be natural boundaries - changing them by a few percentage points did not shift more than one or two centers into or out of these classes of publicly funded centers.

The 30 centers (either nonprofit or for-profit) receiving public funds tied to more stringent standards than required by the state were compared with all other centers in the sample. These specially regulated centers included Headstarts with wraparound programs, full-day school-based preschool programs, centers with at least 20% of their clientele composed of children with special needs, and specially financed centers in Connecticut. The analysis is intended to indicate differences in performance of centers which must meet more stringent quality standards than other centers in the region.

Finally, worksite centers were compared with all other centers in the sample. Worksite centers were defined by three criteria. First, they had to be on or adjacent to facilities of some identifiable employer. Second, they had to be intended for the employees (or in the case of a college, the students) of that employer. Third they had to receive significant assistance from that employer. The for-profit centers were all sponsored by businesses outside of the ECE field. The nonprofits in the sample were sponsored by either colleges or hospitals. There were 16 identified worksite centers; five were for-profits and the others were mainly public auspices. There may have been more centers in the sample that would meet these criteria, but they could not readily be identified.

PROCEDURES

Tables in the Appendix to this chapter summarize results of analyses of variance to compare means corresponding to the five schemes for categorizing centers.

Because of the smaller numbers of centers in each category, some consolidation of states was necessary to maintain subsample sizes. Based on the earlier analyses that California and Connecticut were relatively similar states with respect to extent of regulation and quality of centers, and that Colorado and North Carolina were also similar to some extent, these two pairs of states were chosen for this analysis. Hence, this analysis compares the two higher quality, more highly regulated states with the two lower quality, less stringently regulated states. This division also separates the higher cost-of-living states (California and Connecticut) from the lower cost-of-living ones (Colorado and North Carolina). This pairing produced reasonably balanced subsample sizes in the two pairs of states. Two-way ANOVA's were conducted using state pairs, one of the center categories described above, and a state pair by center category interaction.

All financial data reported in the tables, including wages and foregone earnings, are reported in nominal values, the actual dollar values reported. They have not been adjusted for differences in cost-of-living between the two state pairs. For purposes of comparison of the dollar values between the state pairs, the price level in California and Connecticut combined is about 129% of the price level in Colorado and North Carolina. When these price level adjustments are made to cost and revenue data for California and Connecticut, the figures are very similar across the two state pairs. This means that in the analysis of variance reported below the significant state pair main effects would disappear if cost-of-living adjustments were made.

The cost-of-living adjustments do not entirely wipe out the differences in wages between the state pairs. Real wages appear to be higher in California and Connecticut for most job titles in this industry. After adjusting similarly for the cost-of-living, foregone earnings were smaller in California and Connecticut than in Colorado and North Carolina. This means that child care staff were giving up less income in working in child care in California and Connecticut than in Colorado and North Carolina. This suggests that ECE centers in the former two states may be able to attract better quality workers than centers in the latter two states.

Since means of financial variables for California and Connecticut were consistently higher than in Colorado and North Carolina, these findings are not reported in the text. They repeat information already summarized in earlier chapters.

RESULTS

NONPROFIT CENTERS

Center Structure

Table 11.1 indicates that the church-affiliated centers looked significantly different in analyses of the enrollment and ethnicity variables from other nonprofit centers. Proportionately fewer of the children in the church-affiliated centers received subsidies than in the independent or public centers. Similarly, the proportion of children and staff who were white/non-Hispanic was higher in the church-affiliated centers than in the independent centers.

Table 11.2 shows that compared to independent and church-affiliated centers, directors of public centers had more education and early childhood training. Public centers also provided more outside space per child than did the independent or church-affiliated centers.

Wages

Table 11.5 shows that mean wages for all job titles in California and Connecticut were significantly higher than in Colorado and North Carolina. These wage premiums were high enough to suggest higher real wages for teacher-directors and possibly for teachers in these two states than in the two lower-wage states. Wages for all job titles in public centers were higher than in independent and church-affiliated centers, more so in California and Connecticut than in Colorado and North Carolina where there was no difference for assistants. For teachers and total teaching staff in California and Connecticut wages in independent centers were higher than wages in church-affiliated centers.

Foregone Earnings

Among nonprofit centers average foregone earnings for all job titles were lower in publicly owned centers than in private nonprofit centers, with relatively larger differences in California and Connecticut (see Table 11.6). Teacher-director foregone earnings in publicly owned centers were actually negative in California and Connecticut (but the sample size was very small), as were administrator foregone earnings in all states.

Benefits

Tables 11.7 and 11.8 summarize differences in benefits. Compared to church-affiliated centers, public centers provided more benefits, and all public auspice centers provided some form of health insurance for teachers and assistants. In particular, almost half of the public centers in California and Connecticut provided maternity leave for both teachers and assistants. Compared to church-affiliated centers, independent centers provided more benefits for assistants and a larger percent provided some health insurance to teachers. Church-affiliated centers provided more working conditions than independent centers. A larger percentage of church-affiliated centers gave child care fee discounts to staff than independent centers, and a larger percent of independent centers gave them than did public centers.

Staff Characteristics

Staff characteristics were analyzed but not tabled. Compared to independent centers, a smaller percent of staff in church-affiliated centers were single, and their household income was higher. Although there were no differences in the number of children living with staff members, the proportion of staff with children receiving care at the center was greater in church-affiliated than public centers.

Classroom Structure and Quality

Table 11.13 shows a higher percent of teachers had at least an A.A. degree in ECE in public centers than in independent and church centers, and that a higher percent had this level of training in independent centers than in church-affiliated centers. The mean years of education completed was greater for teachers in public and independent nonprofit centers than in church affiliated centers. There was no significant difference in training or education for assistants. There was no significant difference in teaching staff tenure by auspice; however, teaching staff in California and Connecticut had worked at the center longer than staff at centers in Colorado and North Carolina. The ratio of staff to children was not higher in public centers than in other nonprofits.

Separate ANOVAs were run (but not tabled) comparing all six auspices. Public centers and independent nonprofit centers had higher classroom structure measures than all of the for-profit subdivisions and church-affiliated nonprofit centers. Specifically, public and nonprofit independent centers had more stringent mid-morning ratios and higher levels of teacher ECE training and formal education than all types of for-profit centers and church-affiliated nonprofit centers. Teachers and assistants in all nonprofit auspices had longer tenure in the center than teachers and assistants in all three for-profit auspices.

Overall classroom quality was higher in public centers than in independent nonprofit centers, which had higher quality than church-affiliated centers. Public centers and independent nonprofit centers also had higher process quality than all of the for-profit subdivisions. For public centers and independent nonprofit centers, quality did not differ significantly by state pair.

Expended Cost per Child Hour

Total expended costs per child hour, shown in Table 11.15, were significantly lower in church-affiliated centers than either independent or publicly owned centers. Church sponsored centers averaged nearly one-third lower total expended costs ($1.68 per child hour) than independent ($2.45) and public ($2.65) centers.

Labor costs were 79% of total costs in nonprofit centers and it was here that church sponsored centers saved the most. Their labor costs ($1.35 per child hour) averaged about $.60 per child hour less than other nonprofits and the difference was significant. Public centers had significantly higher labor cost ($2.21 per hour) than independent centers ($1.86), primarily because public centers paid higher benefits.

Public centers had significantly lower occupancy costs ($.07 per child hour) than either church-affiliated ($.12) or independent centers ($0.21). All other costs in nonprofit centers were small. Church-affiliated centers had significantly lower food costs than others, and independent centers reported significantly higher insurance costs (not tabled). Otherwise, differences were insignificant.

Revenue and Surplus per Child Hour

Table 11.16 shows that total revenues were significantly lower per child hour in church-affiliated ($1.76) than independent ($2.50) or public ($2.71) centers. Revenue from parent fees per child hour were significantly higher in church-affiliated ($1.49) than public ($.90) centers. Revenue from parents fees for independent centers ($1.22) were not significantly different from either. However, in church-affiliated centers parent fees represented 85% of total revenue, compared to 49% in independent nonprofits and 35% in public auspices. Public revenues were highest in public centers ($1.53) followed by independent ($1.01) and church-affiliated ($0.18). Surplus per child hour did not differ significantly within the nonprofit sector.

Subsidies per Child Hour

Total inkind donations were highest in public centers ($0.52 per child hour); both church-affiliated and independent centers averaged about $0.27 (see Table 11.17). Church-affiliated centers averaged the least subsidy from volunteers; public centers averaged the most from donations of space. Foregone earnings were significantly lower in public centers compared to other nonprofits. Full cost of care was significantly lower in church-affiliated centers than in independent and public centers.

Fees

There were no significant differences among nonprofit auspice types in monthly maximum fees charged to parents or reimbursed by public agencies for preschoolers or infants.

FOR-PROFIT CENTERS

Center Structure

Independently owned centers had smaller total enrollments than did the centers that were part of local or national systems (Table 11.1). The ratio of enrollment to maximum allowed enrollment was lower for national centers than for independent and local systems centers; that is, centers in national systems had more excess capacity. The proportion of children who were subsidized and who were infants or toddlers was higher in the lower quality/regulation states among children attending for-profit centers.

Wages

In for-profit centers, teachers' wages were higher in local systems and independent centers than in centers belonging to national systems, due mainly to wage differentials in California and Connecticut (Table 11.5). For teaching staff as a whole in California and Connecticut, wages in independent centers were higher than in centers in national systems.

Comparing wages paid by nonprofit and for-profit centers, on average, church-affiliated centers paid wages to assistants which were very similar to wages paid by for-profit centers. Average teacher wages paid by church-affiliated centers were similar to those paid by independent for-profit centers and for-profit centers in local systems. In California and Connecticut, average administrative and specialist wages in church-affiliated centers were roughly comparable to wages paid by for-profit independent centers and centers in national systems. In general, there was somewhat less variation within each for-profit auspice than within each nonprofit auspice, and less variation within national systems than in the two other for-profit auspices.

Foregone Earnings

Among for-profit centers there were no significant differences in mean foregone earnings for teacher-directors or administrators/specialists (Table 11.6). However, for teachers in California and Connecticut, the mean foregone earnings provided by staff of independent centers was less than at centers in local and national systems.

Benefits

In the for-profit sector, in general, centers in national systems provided more benefits and more working conditions than did local chains and independent centers, and centers in Colorado and North Carolina provided more benefits to assistants than did centers in California and Connecticut (Tables 11.7 & 11.8). A larger percent of centers in national systems provided maternity leave for teachers (35%), and at least partial health insurance for teachers (86%) than local systems and independent centers. A larger percent also provided maternity leave for assistants than local chains and independents. Most national and local systems provided fee discounts for children of staff. A majority of (but significantly fewer) independent centers provided staff discounts. The analysis indicates no significant differences with respect to benefit policies for part-time staff.

Turnover

Turnover rates did not differ much between for-profit and nonprofit auspices. However, compared to other for-profit centers, a higher percent of staff in centers that were part of national systems reported being likely to quit in the future because of low wages.

Staff Characteristics

There was little difference in staff characteristics among for-profit auspices. The only difference within auspice types was that in California and Connecticut the proportion of staff with children receiving care at the center was greater in centers in national systems than in independent for-profits even though staff working in the different auspices reported the same number of children living at home.

Classroom Structure and Quality

There were no differences in classroom structure variables or overall quality among the for-profit auspices (Table 11.13) except that teacher tenure on the job was lower for centers in national systems than in the other two categories. In addition, with respect to staffing ratio there was a state x auspice interaction. Staff-to-child ratios were higher in independent for-profits than in national chains in California and Connecticut, but were higher in national chains than in independent for-prfits in Colorado and North Carolina.

Expended Cost

For-profit centers did not differ significantly in total expended costs or labor costs per child hour among independents, local chains, and national systems (Table 11.15). Occupancy costs were higher for national chains than in independent for-profit centers. Other costs did not differ significantly.

On average, the total cost per child hour in independent for-profit centers and centers in national systems were significantly higher than in church-affiliated centers, but lower than in independent nonprofit and public centers (not tabled). (Total cost per child hour for centers in local chains was similar to that in the other two for-profit auspices, but because of the small sample size the differences were not statistically significant). Labor cost per child hour was similar in for-profit centers to those in church-affiliated centers and lower than those in independent or public centers.

Revenue

Total revenue per child hour, revenue per child hour from parent fees, and profit per child hour showed no significant differences within the for-profit sector (Table 11.16). Church-affiliated nonprofits had significantly lower total revenues per child hour than independent for-profit centers and centers in national systems, while independent nonprofit centers and public centers had higher total revenue per child hour (not tabled). (Total revenue for centers in local chains was similar to that in the other two for-profit auspices, but because of the small sample size the differences were not statistically significant).

All of the nonprofit auspices showed lower revenue per child hour from parent fees than any of the for-profit centers, reflecting their higher percentages of subsidized children and higher inkind donations. Public sources of funds for the for-profit sector averaged $0.27 per child hour (similar to church-affiliated centers) with no significant differences among independents, local chains, and national systems. However, public support per child hour was lower in California and Connecticut than in Colorado and North Carolina.

Subsidies and Fees

For-profit centers made very little use of volunteers, even though the value of volunteer contributions was significantly higher for independent for-profit centers than for the other two auspices ($0.03 vs $0.005!). There were no significant differences among for-profit auspices with respect to inkind donations, foregone earnings, or full cost (Table 11.17). Total inkind donations per child hour were significantly lower for for-profit auspices than for the three nonprofit auspices. There were no significant differences among for-profit auspices with respect to maximum monthly fees charged to preschoolers or infants.

PUBLICLY SUPPORTED CENTERS

Center Structure

Table 11.3 indicates that the proportion of subsidized children was greater in publicly supported centers than those little public funding, and greater in centers dependent on fee reimbursement than in public auspices, with some differences by state-pairs. The percentage of white non Latino children enrolled was less in both categories of publicly supported private centers than in public auspices, which was less than in centers with little public support. Table 11.4 indicates smaller square footage of outside space per child in publicly supported centers and centers with little public support than in public auspices. The director's level of education and special ECE training was greater in public auspices than in centers with public support or in centers with little public support. Finally, the level of special ECE training was greater for public auspice centers than for centers with little public funding.

Wages

Table 11.9 indicates that for all job classifications wages paid by public auspice centers were higher than wages paid both by publicly supported private centers and by centers with little public funding. Average wages for teachers in publicly subsidized private centers were higher than in centers not receiving substantial public funding. For Colorado and North Carolina teacher wages were lower in centers more highly dependent on state fee reimbursement than in private centers with multiple sources of public funding and were similar to wages in centers with little public funding in these states.

Foregone Earnings

In California and Connecticut, foregone earnings for all categories of staff in public auspices were lower than those in publicly supported private centers and for centers which did not receive much public funding. They were higher for assistants in private centers with multiple public funding sources than in centers dependent on fee reimbursement and in centers with little public support.

Benefits

Results indicate some budgetary impact of low reimbursement rates, and some interaction effects. For teachers, the number of benefits and the percent of centers providing some health coverage was larger in public auspices than in centers dependent on state reimbursement and centers with little public funding. The number of positive working conditions was greater in centers with multiple public funding sources than in public auspices and centers dependent on state fee reimbursement. In California and Connecticut the percentage of centers providing maternity leave was higher in public centers than in centers dependent on state reimbursement and centers receiving little public support. In Colorado and North Carolina the percentage of centers with maternity benefits was lower in centers dependent on reimbursement than in centers receiving little public funds. Finally, a smaller percent of publicly supported and publicly operated centers gave staff fee discounts than centers receiving little public funds.

Turnover

Compared to other forms of public funding and to little public funding, in California and Connecticut teacher turnover was higher in centers more dependent on reimbursement; in Colorado and North Carolina teacher turnover was higher in private centers with multiple public funding streams. Compared to centers with little public funding, a higher percent of staff reported being likely to leave because of low wages in private centers with multiple public funding streams.

Staff Personal Characteristics

Staff were older in public centers and publicly supported centers with multiple public funding sources than staff in centers with little public funds. A smaller proportion of staff had children receiving care in centers with public funding than in other centers in the sample.

Classroom Structure and Quality

Teachers at public auspice centers had more ECE training and years of education than teachers at centers dependent on fee reimbursement and centers with little public support. Teachers at centers with multiple public spending streams had more training and education than at centers with little public funding. Teachers and assistants at publicly funded private centers had more tenure than centers with little public funding and assistants at public auspice centers had more tenure than teachers at centers with little public funding.

Midmorning staff-child ratios were higher in public auspice centers in all states and in centers dependent on fee reimbursement in California and Connecticut than in centers with multiple public funding sources and centers with little public funding. Public auspices had higher quality than publicly funded private centers and centers with little public funding.

Expended Costs

Total expended costs for public auspices ($2.53 per child hour) and multifunded centers ($2.78) were significantly higher than those for all other centers ($2.02) (Table 11.18). Reimbursement-dependent centers did have significantly higher total costs in California and Connecticut ($3.10) than other centers, but in Colorado and North Carolina, total costs in these centers ($1.58) were no higher than centers with little public support ($1.65).

Labor costs for publicly funded centers averaged between 75% and 83% of total expended costs, similar to the sample of nonprofits in general. The pattern of labor costs was similar to those for total costs. In particular, labor costs in Colorado and North Carolina centers dependent on fee reimbursement ($1.00) were, if anything, below labor costs centers with little public support in the same states ($1.12).

Occupancy costs in these publicly funded centers ranged from 3% of total cost in public centers, to 10.5% in the multifunded centers. They were significantly lower in public funded centers than in centers with little public support.

Among the smaller categories of cost, all of the publicly funded centers had higher food costs than centers with little public funding. Most other cost categories showed no significant differences related to public funding.

Revenue

Public auspices and multiple funded centers averaged significantly higher total revenue than centers with little public funding (Table 11.19). Revenue from parent fees was significantly lower in all categories of publicly funded centers than in centers less dependent on public funds, and was significantly higher in public centers ($0.91) than in centers dependent on reimbursement ($0.41).

The highest levels of public support were in the multifunded centers ($2.39 per child hour), which had significantly higher support levels than centers dependent on fee reimbursement ($1.82). In turn, these centers had significantly higher support than public auspices ($1.48), which had significantly higher support than centers less dependent on public funding ($0.17). In Colorado and North Carolina, centers dependent on fee reimbursement were funded at 58% of the level for multifunded centers.

The differences in public support levels combined with the partially complementary differences in revenue from parent fees in the same centers appear to reflect, first, less subsidy in public centers that serve higher income clientele at colleges and universities; and, second, a greater commitment to helping children of poor families in California and Connecticut reflected in their higher reimbursement rates.

Subsidies and Full Cost

Total inkind donations in all publicly supported centers averaged about $0.40 per child hour and were significantly higher than in centers with little public funding, but did not differ significantly among types of publicly supported centers (Table 11.20). Public centers averaged significantly lower foregone earnings than other publicly supported centers and centers with little public support. In publicly supported centers with multiple sources of funds full cost ($3.12) was significantly higher than for centers with little public funding. For centers dependent on fee reimbursement in Colorado and North Carolina full cost was low, similar to full cost in centers not receiving substantial public funds in these states, indicating that reimbursement did not affect full costs in these two states.

Fees

Fees charged for ECE did not differ significantly among these publicly supported centers or between those centers and centers with little public funding.

PUBLICLY SUPPORTED CENTERS REQUIRED TO MEET SPECIAL REGULATIONS

Special regulation centers were compared to all other centers in the sample to determine to what extent tieing standards to public funding affected performance. A special analysis was required because these centers overlapped with publicly supported centers.

Wages, Benefits, and Foregone Earnings

Table 11.9 shows that wages for all job titles (except for assistants in Colorado and North Carolina) were higher in special regulation centers than all other centers. Furthermore, for teaching staff the difference was greater in California and Connecticut. These centers also provided more benefits than other centers (Table 11.11 and 11.12). A higher percent provided maternity leave, and health insurance (94%), and a smaller percent provided child care fee discounts to their staff.

In California and Connecticut, foregone earnings for all job titles were lower in special regulation centers than in other centers. In Colorado and North Carolina this was only true for teacher-directors and administrators (Table 11.10).

Turnover, Classroom Structure and Quality

Staff in special regulation centers reported being less likely to leave their jobs than in other centers. Directors (Table 11.4) and teachers had more formal education, and both teachers and assistants had more ECE training and longer tenure in the center. Tenure in the centers for both teachers and assistant teachers also varied with state regulation, so that there was a greater difference in tenure between these centers and other centers in California and Connecticut. Classroom process quality scores were also higher in these centers.

Expended Cost and Revenue

Total expended costs for publicly supported centers meeting special standards ($2.62) were significantly higher than those for all other centers ($2.02) (Table 11.18). They had more public support and total revenue per child hour than other centers and less parent fees per child hour.

Subsidies and Fees

Special regulation centers had more volunteer services, occupancy donations, and total inkind donations than the other centers in the sample. Fees were not significantly different than for other centers.

WORKSITE CENTERS

The group of 16 identifiable worksite centers, 9 in California and Connecticut (5 of the 9 were for-profit centers), and 7 in Colorado and North Carolina (all nonprofit, in hospitals and colleges), were singled out to see if they represented high quality or high cost centers. Although the small number of such centers makes tests of significance questionable, means and F-tests are reported.

Center Structure

Table 11.4 shows that compared to other centers worksite centers had directors with more general education and early childhood training. In addition, worksite centers in Colorado and North Carolina tended to have larger total enrollments.

Wages and Benefits

Table 11.9 shows that for all staff wages at worksite centers were higher than wages at other centers. The wage differential between worksite and other centers was higher in California and Connecticut than in Colorado and North Carolina.

For teachers, worksite centers provided more benefits than other centers, and a higher percent (100%) provided health insurance than did non worksite centers (Tables 11.11). A smaller percent of worksite centers provided child care fee discounts to staff than non worksite centers. Compared to other centers, in California and Connecticut a larger percent of worksite centers provided maternity leave for teachers, in Colorado and North Carolina a smaller percentage (none) did. Compared to other centers, in California and Connecticut worksite centers provided more benefits; and a larger percent provided at least partial health insurance for assistants, while the reverse was true in Colorado and North Carolina.

Foregone Earnings

Mean foregone earnings of teachers, assistants, and teacher-directors were less in worksite centers than at other centers. For teacher-directors the differences were relatively greater in California and Connecticut (Table 11.10). Mean worksite foregone earnings in California and Connecticut were negative for all job titles except assistants. There were no significant differences between worksite and other centers in foregone earnings for administrators-specialists.

Staff Characteristics

In California and Connecticut worksite center staff were older than staff in other centers; the reverse was true in Colorado and North Carolina. Staff at worksite centers reported having fewer children living at home, and a smaller percentage of staff had children receiving care at the center than in other centers.

Classroom Structure and Quality

Examination of Table 11.14 suggests that worksite centers had higher staff-child ratios than nonworksite centers. A larger percent of teachers had at least an A.A. degree in ECE than in other centers and assistants had more years of formal education. Finally, worksite centers had higher overall quality scores.

Expended Cost

Total expended costs in worksite centers in California and Connecticut were significantly higher than in other centers (Table 11.18), but they were not in Colorado and North Carolina.

Labor costs were 80% of total costs in Colorado and North Carolina and 90% in California and Connecticut. The high percentage in the latter two states appears to have been made possible by high inkind space donations. Labor costs were significantly higher in worksite centers in California and Connecticut than in other centers in the same states, but not in Colorado and North Carolina.

Occupancy costs ($0.02 per child hour) were significantly lower in worksite centers in all states than in other centers ($0.29), reflecting the space donations that were common in this group. Expenditures in other categories were not significantly different between these and other centers.

Revenue

Total revenue in worksite centers ($2.74 per child hour) was significantly higher than that for other centers ($2.16) and was comparable to the centers with multiple sources of public funds (Table 11.19). All of the difference, however, was in California and Connecticut ($3.87 per child hour). Revenue per child hour in worksite centers in Colorado and North Carolina was not significantly different than for other centers in the same states. Neither revenue from parent fees nor from public sources was significantly different in worksite centers than other centers.

Subsidies and Fees

Worksite centers in California and Connecticut had the highest average total inkind donation of any identifiable group of centers shown in Table 11.20. The worksite centers in California and Connecticut averaged $1.31 inkind donations while those in Colorado and North Carolina averaged $0.45, in line with donations to publicly supported centers.

Foregone earnings in worksite centers were less than in other centers at $0.07 per child hour, $0.36 in Colorado and North Carolina and actually - $0.23 in California and Connecticut. Compared to all other centers, full cost of care in worksite centers was higher overall.

Fees charged to parents or public agencies did not differ significantly between worksite and other centers.

SUMMARY AND CONCLUSIONS

These comparisons can be summarized as follows:

FOR-PROFIT CENTERS

- Types of for-profit centers did not differ significantly on total costs, total revenues, or total subsidies per child hour. However, occupancy costs were higher for centers in national systems than in other for-profit centers.

- On average, all for-profit auspices had lower quality scores, costs, subsidies, revenue, and full costs per child hour than independent nonprofit and public auspice centers.

- Compared to other for-profit centers, centers which were part of national systems served more children, had lower capacity utilization, lower wages for teachers, and more staff benefits across all job titles.

- In California and Connecticut, teacher foregone earnings were higher for centers in national systems than in independent for-profit centers. A larger percent of staff reported they were likely to quit because of low wages in the next year.

CHURCH-AFFILIATED CENTERS

- Church-affiliated centers looked more like for-profit centers than they looked like the other two categories of nonprofit centers. They had lower structural quality scores and process quality scores than other nonprofits. They served smaller percentages of subsidized children and minorities. Wages and labor costs were lower than for other nonprofits and similar to those for for-profits; staff benefits were similar to those for independent for-profit centers and local for-profit chains.

- Due in part to inkind donations, church-affiliated centers had lower expended costs per child and lower total revenue per child than for-profit centers. Full costs per child hour were similar to those of for-profit centers and significantly lower than in other nonprofits.

PUBLIC AUSPICES

- Public centers provided higher quality services than all other auspice groups except independent nonprofits. Compared to other nonprofit centers, on average, directors had more education and ECE training, earned higher wages, and had less foregone earnings (actually less than zero).

- Compared to private centers receiving public support, public auspice centers had higher quality, higher wages, lower foregone earnings, and generally more benefits.

- In California and Connecticut, teachers and teacher-directors in public auspice centers earned higher wages and had negative foregone earnings. Public auspice centers in these states received more in subsidies than did other nonprofit centers. It appears that these subsidies permitted these centers to pay market wages for their staff.

PRIVATE CENTERS WITH PUBLIC FUNDS TIED TO HIGHER STANDARDS

- Compared to other centers, centers with public funding tied to higher standards had higher process quality, wages, benefits, and working conditions, and lower foregone earnings. Staff members were older, had longer tenure at the center, a smaller percent reported being likely to leave their jobs, and teachers had more education and training.

- Special regulation centers had higher costs (including higher labor costs) and higher revenues per child hour than other publicly supported centers. Their mean level of public support was high, similar to support received by centers with multiple public funding sources. They had the highest full cost of care of any publicly supported centers ($3.78/hour).

PUBLICLY SUPPORTED PRIVATE CENTERS

- Publicly supported centers had higher costs, revenues and in-ind donations per child-hour than centers little with public financial support. Even with lower foregone wages, full costs per child hour were higher than those for nonsubsidized centers, but not higher than for public auspices.

- These centers did not have significantly different process quality scores than centers with no public funding.

PRIVATE CENTERS DEPENDENT ON STATE REIMBURSEMENT OF FUNDS

- Quality scores for centers dependent on fee reimbursement were not significantly different from quality scores of multi-funded centers or centers with little public funding.

- Teachers had more ECE training and longer tenure at the centers.

- There is some evidence of budgetary impact from low reimbursement rates in Colorado and North Carolina. Their expended costs per child hour, labor costs per child hour, and full cost were similar to those in centers with little public support. They were funded at a lower level than centers with multiple public funding sources.

- In California and Connecticut expended costs and staff-child ratios were higher than in nonsubsidized and multi-funded centers. They were funded at the same level as private centers with multiple public funding streams. Their full cost was significantly higher than for centers little public funding.

WORKSITE CENTERS

- Compared to off-site centers, worksite centers had higher quality, directors had more education and training, wages and benefits were higher for all job titles and foregone earnings were lower for teaching staff.

- Centers in California and Connecticut differed from those in Colorado and North Carolina, possibly because of differences in the types of worksite centers which fell into the sample. Costs, revenues, inkind donations, and full cost of care were significantly higher than in other centers in California and Connecticut, but not in Colorado and North Carolina. In-kind (mainly occupancy) donations and full cost of care in California and Connecticut worksite centers were the highest of any group of centers, and occupancy inkind donations held down expended costs.

- Since fees were not significantly different from off-site centers, worksite ECE services appear to be a good deal for parents.

STAFF CHILD CARE DISCOUNTS

- Child care discounts may be an inducement to potential workers needing such services, and may allow centers to offer lower wages with little or no cost to the center (in fact, center revenues may be increased through staff discounts). A larger percent of church-affiliated centers and for-profit centers provided child care discounts. All centers which were part of national for-profit systems gave staff discounts for child care and a larger percent of staff in these centers reported children receiving ECE services at the center. National systems may substitute benefits and child care discounts for higher wages (labor cost per child hour in these centers is similar to that in the other for-profit centers). These policies may have other impacts however. For instance, health and retirement benefits should induce longer tenure, whereas staff discounts for child care may attract young mothers temporarily into ECE occupations which could reduce tenure.

THE HIGHER QUALITY CENTERS

- The following types of centers seem to provide better quality: public auspices, independent nonprofits, private centers receiving funds tied to higher standards, and worksite centers. Generally, these types of centers also have higher expended costs and full costs per child hour.

Chapter 11 Appendix

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Table 11.1

Enrollment Statistics by Auspice

		MEANS BY AUSPICES AND STATE PAIRS													
		Nonprofit							For-profit						
		Independent		Church		Public		All	Independent		Local Chain		Nat. System		All
		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	
	N	51	47	40	38	9	15	200	54	70	11	14	35	13	197
Total FTE Children Enrolled	MEAN	65.71	50.14	68.14	54.75	53.78	66.38	59.97	66.79	50.42	121.75	115.34	111.13	88.48	76.6
	STD	48.87	29.74	31.7	27.83	35.11	68.46	39.74	49.44	35.79	46.29	81.58	36.52	35.53	51.63
Actual to Preferred Enrollment Ratio	MEAN	0.93	0.93	0.97	0.87	0.92	0.92	0.92	0.9	0.88	0.89	0.94	0.91	0.75	0.89
	STD	0.18	0.19	0.17	0.14	0.17	0.13	0.17	0.17	0.18	0.14	0.24	0.36	0.15	0.22
Actual to Maximum Enrollment Ratio	MEAN	0.8	0.86	0.81	0.76	0.84	0.84	0.81	0.86	0.82	0.83	0.93	0.80	0.73	0.83
	STD	0.2	0.2	0.18	0.17	0.27	0.26	0.2	0.2	0.19	0.16	0.24	0.17	0.18	0.19
Proportion FTE Subsidized	MEAN	0.51	0.41	0.13	0.09	0.48	0.71	0.34	0.21	0.06	0.14	0.03	0.17	0.03	0.12
	STD	0.4	0.44	0.22	0.18	0.34	0.38	0.39	0.21	0.1	0.16	0.04	0.17	0.04	0.17
Proportion FTE Infants/Toddlers	MEAN	0.25	0.16	0.15	0.16	0.19	0.14	0.18	0.33	0.23	0.32	0.09	0.19	0.22	0.24
	STD	0.26	0.22	0.19	0.19	0.33	0.29	0.23	0.25	0.25	0.18	0.16	0.07	0.19	0.23
Proportion FTE White/Non-hispanic	MEAN	0.53	0.56	0.79	0.58	0.66	0.45	0.60	0.76	0.78	0.80	0.67	0.75	0.77	0.76
	STD	0.39	0.38	0.26	0.31	0.24	0.37	0.35	0.25	0.27	0.13	0.28	0.21	0.22	0.25
Proportion White/Non-hispanic Staff	MEAN	0.81	0.89	0.79	0.67	0.74	0.59	0.63	0.78	0.79	0.79	0.57	0.76	0.69	0.76
	STD	0.39	0.39	0.28	0.29	0.28	0.31	0.35	0.31	0.29	0.19	0.40	0.21	0.29	0.26

	ANOVAS (Nonprofit) F-tests			ANOVAS (For-profit) F-tests		
	Auspice	State	State x Auspice	Auspice	State	State x Auspice
Total FTE Children Enrolled	0.20	0.6	1.20	25.4*** I<L,N	3.40	0.20
Actual to Preferred Enrollment Ratio	0.00	1.50	2.20	1.4	1.40	2.00
Actual to Maximum Enrollment Ratio	1.30	0.00	1.50	3.2* N<I,L	0	1.70
Proportion FTE Subsidized	30.0*** C < I, P	0.30	2.00	1.7	22.6*** CO&NC > CA&CT	0.20
Proportion FTE Infants/Toddlers	1.20	1.10	0.80	2.7	6.6* CO&NC > CA&CT	2.80
Proportion FTE White/Non-hispanic	3.8* C > I	5.3* CO&NC > CA&CT	2.90	0.2	0.5	1.1
Proportion White/Non-hispanic Staff	5.8** C > I	1.2	2.30	1.7	3.20	1.70

***p<.001
**p<.01
*p<.05

State Pairs: CO&NC = Colorado and North Carolina
CA&CT = California and Connecticut

Table 11.2

Facilities and Director's Qualification by Auspice

		MEANS BY AUSPICES AND STATE PAIRS													
		Nonprofit							For-profit						
		Independent		Church		Public		All	Independent		Local Chain		Nat. System		All
		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	
Inside square feet per child	N	51	47	40	38	9	15	200	54	70	11	14	35	13	197
	MEAN	104	74	85	90	118	87	90	75	69	58	77	57	113	70
	STD	85	40	47	57	114	38	63	49	32	17	61	21	198	63
Outside square feet per child	MEAN	153	147	186	205	423	338	194	131	198	83	89	113	98	144
	STD	164	113	173	332	423	637	279	101	255	62	54	82	28	171
Director's Years of Prior Experience	MEAN	8.82	7.59	8.06	7.64	12.88	9.07	8.35	6.89	7.05	11.18	6.08	6.94	7.75	7.21
	STD	5.85	7.08	7.67	7.25	4.88	8.31	7.01	7.07	7.53	4.81	3.86	4.97	3.57	6.43
Director's Years of Education	MEAN	16.14	16.33	16.05	15.89	17.13	17.50	16.26	15.36	15.78	15.27	15.38	15.26	15.42	15.49
	STD	1.51	1.80	2.10	1.69	1.81	0.76	1.76	2.06	2.05	1.27	1.50	1.80	1.68	1.91
Director's ECE Training (1)	MEAN	8.38	8.59	8.20	8.47	9.50	9.93	8.56	7.74	7.83	8.64	7.31	7.68	7.50	7.77
	STD	2.15	2.56	2.33	2.01	2.00	2.13	2.26	3.03	2.72	1.21	1.93	1.84	1.62	

	ANOVAS (Nonprofit) F-tests			ANOVAS (For-profit) F-tests		
	Auspice	State	State x Auspice	Auspice	State	State x Auspice
Inside square feet per child	0.50	2.90	1.90	0.9	3.8	3.9* CA&CT(N)>CO&NC(N)
Outside square feet per child	6.6** P > C, I	0.30	0.30	3.4* I > L	0.4	1.00
Director's Years of Prior Experience	1.70	2.10	0.40	0.7	1.3	1.90
Director's Years of Education	4.9** P > C, I	0.20	0.30	0.2	0.3	0.10
Director's ECE Training	3.2* P > C, I	1.40	0.10	0.8	0.6	1.4

See notes for table 11.1.

Note 1: 5 = at least CDA training, 7 = at least AA in ECE related field, 9 = at least BA/BS in ECE related field, 11 = Graduate degree in ECE related field.

Table 11.3

Enrollments by Sources of Financial Support

		MEANS BY AUSPICES AND STATE PAIRS																
		Public Funding with Special Regulation				Publicly Supported												
		Special		Not		Public Auspice		Multiple Sources		Fee Only		Not Publicly Supported			Worksite		Not Worksite	
Enrollment		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	ALL	CO&NC	CA&CT	CO&NC	CA&CT
Total FTE Children	N	19	11	181	186	9	15	18	11	10	7	163	164	397	7	9	193	192
	MEAN	55.58	77.60	79.20	58.45	53.78	66.38	53.05	45.47	53.08	65.14	82.37	59.60	68.32	94.86	40.86	76.33	59.90
	STD	39.07	73.05	47.78	42.48	35.11	66.46	26.26	24.11	50.57	50.05	46.27	43.00	46.84	81.01	23.20	45.98	45.06
Actual to Preferred Enrollment Ratio	MEAN	0.91	0.95	0.93	0.88	0.92	0.92	0.96	0.89	0.80	0.96	0.93	0.88	0.91	1.05	0.89	0.92	0.89
	STD	0.18	0.17	0.22	0.18	0.17	0.13	0.12	0.10	0.24	0.25	0.22	0.18	0.20	0.12	0.17	0.22	0.18
Actual to Maximum Enrollment Ratio	N	19	11	179	186													
	MEAN	0.83	0.81	0.82	0.82	0.84	0.84	0.88	0.87	0.86	0.80	0.83	0.82	0.82	0.89	0.84	0.82	0.82
	STD	0.22	0.19	0.19	0.20	0.27	0.26	0.28	0.17	0.22	0.23	0.17	0.20	0.20	0.20	0.31	0.19	0.19
Proportion FTE Subsidized	N	19	11	181	186													
	MEAN	0.88	0.76	0.21	0.16	0.48	0.71	0.65	0.79	0.90	0.80	0.18	0.08	0.23	0.23	0.17	0.27	0.20
	STD	0.19	0.32	0.25	0.30	0.34	0.38	0.23	0.30	0.17	0.33	0.23	0.18	0.32	0.22	0.23	0.31	0.33
Proportion FTE Infants/Toddlers	MEAN	0.20	0.05	0.25	0.19	0.19	0.14	0.30	0.25	0.20	0.05	0.24	0.19	0.21	0.26	0.31	0.24	0.18
	STD	0.26	0.11	0.22	0.23	0.33	0.29	0.20	0.31	0.25	0.09	0.22	0.22	0.23	0.18	0.34	0.23	0.23
Proportion White/Non-hispanic Children	N	18	10	176	182													
	MEAN	34.39	56.55	74.56	66.12	0.66	0.45	0.22	0.32	0.15	0.47	0.79	0.70	0.68	80.86	70.06	70.46	65.55
	STD	29.91	35.11	26.77	32.77	0.24	0.37	0.26	0.35	0.17	0.41	0.22	0.30	0.31	11.22	25.33	29.83	33.07
Proportion White/Non-hispanic Staff	N	19	11	181	186													
	MEAN	48.69	72.88	73.34	67.88	0.74	0.59	0.29	0.43	0.22	0.62	0.79	0.71	0.70	74.59	76.77	70.86	67.80
	STD	35.20	33.27	31.14	33.38	0.28	0.31	0.38	0.42	0.26	0.40	0.25	0.32	0.33	18.00	27.75	32.69	33.55

	ANOVAS (Public Funding with Special Reg.) F-tests			ANOVAS (Publicly Supported) F-tests			ANOVAS (Worksite) F-tests		
Enrollment	Special Regulation	State	Interaction	Funding Source	State	Interaction	Worksite	State	Interaction
Total FTE Children	0.04	0	5.72* CO&NC: Not > Reg CA&CT: Not > Reg	2.4	0.00	1.90	0.00	8.9** CO&NC > CA&CT	2.5
Actual to Preferred Enrollment Ratio	0.42	0.00	1.30	0.20	0.1	1.80	1.7	3.4	1.4
Ratio-Actual to Maximum Enrollment	0.00	0.10	0.10	2.00	0.7	0.80	0.7	0.2	0.2
Proportion FTE Subsidized	131.0*** Reg > Not	1.80	0.30	122.4*** Not < Others Pub < Fees	1.00	5.5** CO&NC: Not < others CA&CT: Not < Multi, Fees < Pub	0.2	0.6	0.00
Proportion FTE Infants/Toddlers	4.4* Not > Reg	4.6* CO&NC > CA&CT	1.20	1.8	2.8	0.30	1.4	0.00	0.8
Proportion White/Non-hispanic Children	16.5*** Not > Reg	1.30	6.2* CO&NC: Not > Reg CA&CT: Not = Reg	34.5*** Multi, Fees < Pub < Not	0.3	4.0* CA&CT: others < Not CO&NC: Multi, Fees < Pub, Not	0.9	1.00	0.1
Proportion White/Non-hispanic Staff	2.40	2.20	5.4* CO&NC: Not > Reg CT&CA: Not = Reg	19.6*** Multi, Fees < Pub < Not	2.00	11.5**	0.6	0.00	0.1

See notes for table 11.1

Table 11.4

Facilities and Director's Qualifications by Sources of Financial Support

		MEANS BY FUNDING SOURCE AND STATE PAIRS																
		Public Funding with Special Regulation				Publicly Supported												
		Special		Not		Public Auspice		Multiple Sources		Fee Only		Not Publicly Supported			Worksite		Not Worksite	
		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	All	CO&NC	CA&CT	CO&NC	CA&CT
Inside space per child	N	19	11	181	186	9	15	18	11	10	7	163	164	397	7	9	190	186
	MEAN	111.05	97.53	79.02	77.15	117.87	86.91	78.50	96.21	124.34	85.84	77.89	75.98	80.19	73.78	128.40	80.70	77.84
	STD	84.95	50.31	58.60	65.99	113.76	38.46	45.56	39.63	90.13	56.95	56.72	68.89	63.61	34.67	87.86	60.27	66.79
Outside space per child	N	19	11	180	186	9	15	18	11	10	7	162	164	396				
	MEAN	232.56	202.34	147.10	182.14	422.95	338.14	95.85	347.61	228.83	132.89	142.45	160.23	169.19	193.51	121.40	146.60	185.40
	STD	327.82	259.94	140.12	283.67	423.21	637.16	45.15	579.11	227.07	94.90	133.13	187.23	231.77	206.58	115.50	138.20	288.60
Director's Years of Prior Experience	N	18	10	178	174	8	14	18	10	10	6	160	150	376	7	9	190	186
	MEAN	18.94	7.20	7.83	7.45	12.88	9.07	7.78	7.50	9.50	5.33	7.83	7.36	7.79	11.00	6.61	8.05	7.17
	STD	5.99	5.53	6.54	7.05	4.88	8.31	6.27	6.10	4.70	3.33	6.68	7.01	6.75	6.83	6.84	6.66	6.93
Director's Years of Education	N	18	2	178	172	8	14	18	9	10	6	160	152	377				
	MEAN	16.39	17.33	15.69	15.95	17.13	17.50	15.78	16.56	15.90	16.33	15.67	15.83	15.88	17.14	16.89	15.65	15.67
	STD	1.65	1.39	1.90	1.22	1.81	0.76	1.59	1.33	1.60	2.25	1.93	1.87	1.87	1.46	1.17	2.22	2.99
Director's ECE Training (1)	N	18	10	179	175	8	14	18	10	10	6	161	155	382				
	MEAN	8.94	8.50	8.02	8.22	9.50	9.93	8.11	8.80	8.50	8.17	8.01	8.05	8.17	9.71	10.00	8.12	8.38
	STD	1.86	6.66	2.42	2.39	2.00	2.13	2.72	2.97	1.96	3.31	2.38	2.38	2.42	1.89	1.00	2.40	2.50

	ANOVAS (Public Funding with Special Reg.) F-tests			ANOVAS (Publicly Supported) F-tests			ANOVAS (Worksite) F-tests		
	Special Regulation	State	Interaction	Funding Source	State	Interaction	Worksite	State	Interaction
Inside space per child	4.0*	0.30	0.3	1.9	1.1	1.1	1.77	2.48	3.07
Outside space per child	1.4	0.00	0.5	8.0*** Pub > Others	0.3	3.2* CA&CT: Fees, Not < Pub, Multi CO&NC: Fees, Not < Pub	0.02	0.08	0.93
Director's Years of Prior Experience	1.1	2.2	1.5	1.6	2.6	0.70	0.47	2.27	1.01
Director's Years of Education	6.4* Reg > Not	2	0.5	4.9** Pub > Not	1.4	0.20	4.14* Work > Not	0.03	0.03
Director's ECE Training	1.4	0.10	0.5	3.3* Pub > Others	0.2	0.20	6.9** Work > Not	0.19	0.00

See notes for table 11.1

Note 1   5 = at least CDA training, 7 = at least AA in ECE related field, 9 = at least BA/BS in ECE related field, 11 = Graduate degree in ECE related field

Table 11.5

Wages from Director Interview by Auspice

		MEANS BY AUSPICES AND STATE PAIRS														
		Nonprofit							For-profit							
		Independent		Church		Public		All	Independent		Local Chain		Nat. System		All
Hourly Wage		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	
Teachers	N	46	45	38	38	11	14	192	53	72	11	14	35	13	198
	MEAN	$6.19	$9.41	$5.85	$7.81	$7.06	$13.87	$7.81	$5.43	$7.93	$5.59	$8.14	$5.37	$6.73	$6.62
	STD	1.32	2.27	0.93	1.32	1.71	3.34	2.78	0.92	1.55	0.83	1.67	1.19	0.38	1.75
Assistants	N	39	40	33	28	10	14	164	39	62	11	11	26	10	159
	MEAN	5.10	6.50	5.22	5.98	5.60	8.60	5.94	4.74	6.12	4.74	5.95	4.67	5.91	5.43
	STD	1.13	1.05	0.76	0.87	1.12	2.67	1.55	0.64	1.14	0.37	1.37	0.37	0.53	1.11
Teacher-Directors	N	23	19	26	14	4	5	91	18	27	6	3	24	5	83
	MEAN	8.09	11.20	7.74	10.50	9.33	20.30	9.74	6.93	10.27	6.67	9.42	6.46	8.97	8.07
	STD	3.57	3.64	2.19	3.54	1.91	3.50	4.26	1.46	3.88	1.16	2.40	0.82	2.32	2.96
All Teaching Staff	N	48	46	38	38	12	15	197	54	74	11	14	35	13	201
	MEAN	6.05	8.47	5.89	7.53	6.75	11.92	7.36	5.32	7.63	5.41	7.63	5.30	6.61	6.42
	STD	1.48	2.12	0.94	1.47	1.30	3.32	2.40	0.84	1.52	0.81	1.23	0.70	0.33	1.58
Admin./Specialists	N	38	37	31	26	10	11	153	45	53	11	11	32	12	164
	MEAN	9.19	15.09	9.42	12.18	14.74	18.77	12.22	8.40	13.29	8.88	14.14	8.94	11.46	10.73
	STD	3.62	5.79	2.79	2.78	7.06	7.20	5.45	4.80	6.66	2.17	3.26	1.66	2.42	5.25

	ANOVAS (Nonprofit) F-tests			ANOVAS (For-profit) F-tests		
Hourly Wage	Auspice	State	State x Auspice	Auspice	State	State x Auspice
Teachers	39.71*** P > I > C	179.42*** CA&CT > CO&NC	17.74*** Diff. > CA&CT	4.34* I, L > N	85.17*** CA&CT > CO&NC	3.14* Diff. > CO&NC
Assistants	13.53*** P > I, C	62.79*** CA&CT > CO&NC	7.17*** Diff. > CA&CT	0.32	51.04*** CA&CT > CO&NC	0.13
Teacher-Directors	11.77*** P > I, C	42.51*** CA&CT > CO&NC	6.36** Diff. > CA&CT	0.80	14.12*** CA&CT > CO&NC	0.18
All Teaching Staff	22.08*** P > I > C	111.91*** CA&CT > CO&NC	9.96*** Diff. > CA&CT	3.32* I > N	88.76*** CA&CT > CO&NC	2.84
Admin./Specialists	12.99*** P > I, C	24.35*** CA&CT > CO&NC	1.93	0.52	20.69*** CA&CT > CO&NC	0.89

See notes for table 11.1

Table 11.6

Annual Foregone Earnings by Auspice

Foregone Earnings		MEANS BY AUSPICES AND STATE PAIRS													
		Nonprofit							For-profit						
		Independent		Church		Public		All	Independent		Local Chain		Nat. System		All
		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	
Teachers	N	298	185	256	212	60	57	1068	326	341	123	142	342	139	1413
	MEAN	$5,498	$4,070	$5,538	$5,267	$5,019	$-563	$4,864	$5,611	$4,676	$6,228	$5,532	$5,635	$6,535	$5,528
	STD	4584	5041	4313	3939	4070	6530	4779	3680	5682	4504	5396	6147	4243	5173
Assistants	N	221	212	190	142	55	110	930	155	237	70	45	128	49	684
	MEAN	4351	3508	3341	4232	2204	1481	3468	3844	3310	3196	5182	4173	4043	3756
	STD	4094	4142	2933	3540	2729	3668	3791	3381	3556	2042	5840	3479	3300	3586
Teacher-Director	N	31	21	30	14	4	8	108	22	32	6	3	27	7	97
	MEAN	4578	2991	6156	5829	4271	-7936	3931	5908	3302	6277	-10461	5059	3648	4812
	STD	6601	7559	4902	7476	8032	6603	7318	6023	8903	3400	11711	4361	2719	6700
Admin.-Director	N	71	61	44	40	25	16	257	74	84	18	17	46	20	259
	MEAN	5059	1955	3850	4192	-2926	-1540	2793	4169	3498	4484	4037	3704	3339	3818
	STD	7285	8303	6008	5853	8804	14093	8204	10789	12722	5899	14901	4676	6480	10397

Foregone Earnings	ANOVAS (Nonprofit) F-tests			ANOVAS (For-profit) F-tests		
	Auspice	State	State x Auspice	Auspice	State	State x Auspice
Teachers	22.41*** P < I < C	48.92*** CA&CT < CO&NC	15.69*** Diff. > CA&CT	4.74** I < L, N	0.64	4.13* Only in CA&CT
Assistants	18.67*** P < C, I	0.69	5.56** CA&CT: C > I CO&NC: C < I	1.92	1.83	5.34** CA&CT: L > I, N CO&NC: I, N > L
Teacher-Director	6.03** P < C, I	8.31** CA&CT < CO&NC	3.56* Diff. > CA&CT	1.20	0.00	0.89
Admin.-Director	9.50*** P < C, I	0.17	1.88	0.05	0.09	0.01

See notes for table 11.1

Table 11.7
Teacher Benefits by Auspice

		MEANS BY AUSPICES AND STATE PAIRS														
		Nonprofit							For-profit							
		Independent		Church		Public		All	Independent		Local Chain		Nat. System		All
		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	
	N	48	47	37	38	12	15	197	54	74	11	14	35	13	201
# of Benefits (max = 8)	MEAN	3.06	3.64	2.35	2.24	4.67	5.60	3.20	1.74	1.64	2.27	1.86	4.40	4.54	2.38
	STD	1.90	2.03	1.75	1.58	1.37	1.35	2.01	1.48	1.64	1.19	1.56	1.80	1.76	1.97
# of Working Conditions (max = 12)	MEAN	8.25	7.49	8.65	8.84	7.75	7.73	8.19	7.89	7.39	8.55	7.50	9.83	9.77	8.17
	STD	2.03	2.63	1.72	2.19	1.42	1.62	2.15	2.20	2.08	1.57	1.79	1.34	1.30	2.13
Prop. of Centers with Health Insurance	MEAN	0.75	0.83	0.45	0.58	1.00	1.00	0.71	0.46	0.43	0.55	0.64	0.80	0.92	0.56
	STD	0.44	0.38	0.50	0.50	0.00	0.00	0.45	0.50	0.50	0.52	0.50	0.41	0.28	0.50
Prop. of Centers with Maternity Leave	MEAN	0.19	0.19	0.16	0.05	0.17	0.47	0.18	0.04	0.07	0.00	0.07	0.40	0.31	0.13
	STD	0.39	0.40	0.37	0.23	0.39	0.52	0.38	0.19	0.25	0.00	0.27	0.50	0.48	0.34
Prop. of Centers with Child Care Discount	MEAN	0.58	0.55	0.84	0.79	0.50	0.13	0.62	0.91	0.69	1.00	0.86	1.00	1.00	0.85
	STD	0.50	0.50	0.37	0.41	0.52	0.35	0.49	0.29	0.47	0.00	0.36	0.00	0.00	0.36

	ANOVAS (Nonprofit) F-tests			ANOVAS (For-profit) F-tests		
	Auspice	State	State x Auspice	Auspice	State	State x Auspice
# of Benefits	25.69*** P > I > C	2.49	1.18	43.57*** N > I, L	0.19	0.22
# of Working Conditions	4.28* C > I, P	0.31	1.13	18.38*** N > I, L	2.32	0.49
Prop. of Centers with Health Insurance	16.22*** P > I > C	1.02	0.25	11.14*** N > I, L	0.53	0.48
Prop. of Centers with Maternity Leave	3.19* P > C	1.09	2.93	14.64*** N > I, L	0.00	0.71
Prop. of Centers with Child Care Discount	13.37*** C > I > P	3.92* CO&NC > CA&CT	1.52	5.87** N > I	3.84	1.54

See notes for table 11.1

Table 11.8
Assistant Benefits by Auspice

		MEANS BY AUSPICES AND STATE PAIRS														
		Nonprofit							For-profit							
		Independent		Church		Public		All	Independent		Local Chain		Nat. System		All
		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	
	N	48	47	38	38	12	15	197	54	74	11	14	35	13	201
# Benefits (max = 8)	MEAN	2.46	2.81	1.97	1.50	2.33	4.13	2.39	1.17	1.42	2.18	1.43	4.29	2.85	1.99
	STD	1.95	2.32	1.88	1.62	2.61	2.67	2.16	1.42	1.62	1.33	1.74	1.96	2.54	2.03
# Working Conditions (max = 12)	MEAN	7.02	5.85	6.86	6.79	5.00	6.27	6.49	5.04	6.16	8.55	6.07	9.37	7.92	6.66
	STD	3.40	3.90	3.81	4.00	3.46	3.39	3.72	4.01	3.26	1.57	3.63	2.16	3.82	3.63
Prop. of Centers with Health Insurance	MEAN	0.63	0.62	0.39	0.34	0.50	0.73	0.53	0.30	0.36	0.55	0.43	0.77	0.62	0.45
	STD	0.49	0.49	0.50	0.48	0.52	0.46	0.50	0.46	0.48	0.52	0.51	0.43	0.51	0.50
Prop. of Centers with Maternity Leave	MEAN	0.15	0.13	0.16	0.00	0.08	0.40	0.13	0.00	0.07	0.00	0.07	0.40	0.15	0.11
	STD	0.36	0.34	0.37	0.00	0.29	0.51	0.34	0.00	0.25	0.00	0.27	0.50	0.38	0.31
Prop. of Centers with Child Care Discount	MEAN	0.52	0.34	0.65	0.58	0.25	0.13	0.47	0.63	0.59	1.00	0.71	0.97	0.85	0.72
	STD	0.50	0.48	0.48	0.50	0.45	0.35	0.50	0.49	0.49	0.00	0.47	0.17	0.38	0.45

	ANOVAS (Nonprofit) F-tests			ANOVAS (For-profit) F-tests		
	Auspice	State	State x Auspice	Auspice	State	State x Auspice
# Benefits (max = 8)	6.55** P, I > C	2.66	3.02	25.92*** N > I, L	4.33* CO&NC > CA&CT	3.93* Diff. > CO&NC
# Working Conditions (max = 12)	1.02	0.00	1.24	13.18*** L, N > I	2.36	4.35* Diff. > CO&NC
Prop. of Centers with Health Insurance	6.19** P, I > C	0.51	0.87	8.77*** N > I	0.62	1.03
Prop. of Centers with Maternity Leave	2.38	0.70	5.21** CA&CT: P > I, C CO&NC: P < I	11.09*** N > I, L	0.48	4.65* Diff. > CO&NC
Prop. of Centers with Child Care Discount	8.13*** C > I > P	2.37	0.28	8.74*** L, N > I	3.60	0.93

See notes for table 11.1

Table 11.9

Wages by Sources of Financial Support

		MEANS BY FUNDING SOURCE AND STATE PAIRS															
		Public Funding and Special Regulation				Publicly Supported											
		Special		Not		Public Auspice		Multiple Sources		Fee Only		Not publicly supported		Worksite		Not Worksite	
Hourly Wage		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT
Teachers	N	16	11	178	185	11	14	10	7	17	11	156	164	7	8	187	188
	MEAN	$6.70	$11.16	$5.70	$8.46	$7.06	$13.87	$6.21	$10.08	$5.44	$9.97	$5.71	$8.00	$7.16	$12.65	$5.73	$8.43
	STD	1.60	1.74	1.13	2.40	1.71	3.34	1.43	1.79	1.33	2.47	1.08	1.68	1.51	4.81	1.16	2.15
Assistants	N	14	11	144	154	10	14	7	7	15	10	126	134	5	9	153	156
	MEAN	4.95	7.26	4.97	6.31	5.60	8.60	4.71	7.04	4.51	6.99	4.99	6.06	5.36	7.89	4.96	6.29
	STD	0.67	1.20	0.85	1.43	1.12	2.67	0.30	1.42	0.62	0.98	0.83	1.01	0.92	2.80	0.84	1.28
Teacher-Directors	N	8	2	93	71	4	5	4	1	5	3	88	64	3	4	98	69
	MEAN	8.34	18.40	7.29	10.91	9.33	20.30	7.36	12.16	8.09	14.69	7.24	10.22	7.39	19.65	7.37	10.62
	STD	3.41	0.86	2.18	4.22	1.91	3.50	0.81	.	3.91	4.05	2.23	3.47	1.03	5.15	2.33	3.77
All Teaching Staff	N	17	11	181	189	12	15	10	7	18	11	158	167	7	9	191	191
	MEAN	6.19	9.00	5.65	8.00	6.75	11.92	5.79	8.38	5.43	8.91	5.64	7.64	6.72	12.19	5.66	7.86
	STD	1.04	1.09	1.13	2.17	1.30	3.32	0.80	1.36	1.52	2.66	1.04	1.58	1.16	3.99	1.11	1.81
Admin./Specialists	N	13	10	154	140	10	11	7	7	15	8	135	124	6	6	161	144
	MEAN	9.86	17.21	9.24	13.62	14.74	18.77	7.85	15.34	7.62	15.93	9.14	13.20	12.58	19.85	9.16	13.61
	STD	5.47	4.13	3.87	5.76	7.06	7.20	2.99	4.69	3.42	4.36	3.49	5.50	3.68	9.14	3.96	5.44

	ANOVAS (Public Funding and Special Reg.) F-tests			ANOVAS (Publicly Supported) F-tests			ANOVAS (Worksite) F-tests		
Hourly Wage	Special Regulation	State	Inter-action	Funding Source	State	Interaction	Worksite	State	Interaction
Teachers	23.81*** Reg > Not	90.12*** CA&CT > CO&NC	5.02* Diff. > CA&CT	43.68*** Pub > All Others Multi,Fee > None	219.90*** CA&CT > CO&NC	19.52*** Diff. > CA&CT CO&NC: Multi>Fee	34.16*** Work > Not	71.87*** CA&CT > CO&NC	8.32** Diff. > CA&CT
Assistants	3.49	55.05*** CA&CT > CO&NC	3.92* CA&CT: Reg > Not	16.08*** Pub > All Others	110.69*** CA&CT > CO&NC	9.57*** Diff. > CA&CT	9.21** Work > Not	34.36*** CA&CT > CO&NC	3.31
Teacher-Directors	10.82** Reg > Not	27.76*** CA&CT > CO&NC	6.14* Diff. > CA&CT	14.34*** Pub > All Others Fee > None	34.95*** CA&CT > CO&NC	6.28*** Diff. > CA&CT	14.54*** Work > Not	42.77*** CA&CT > CO&NC	14.43*** Diff. > CA&CT
All Teaching Staff	5.10* Reg > Not	57.09*** CA&CT > CO&NC	0.44	26.80*** Pub > All Others	140.03*** CA&CT > CO&NC	10.52*** Diff. > CA&CT	43.48*** Work > Not	88.39*** CA&CT > CO&NC	15.98*** Diff. > CA&CT
Admin./Specialists	3.94* Reg > Not	30.54*** CA&CT > CO&NC	1.96	9.15*** Pub > All Others	37.88*** CA&CT > CO&NC	1.82	11.64*** Work > Not	17.11*** CA&CT > CO&NC	0.99

See notes for table 11.1

Table 11.10

Annual Foregone Earnings by Source of Financial Support

Annual Foregone Earnings		MEANS BY FUNDING SOURCE AND STATE PAIRS															
		Public Funding and Special Regulation				Publicly Supported											
		Special		Not		Public Auspice		Multiple Sources		Fee Only		Not Publicly Supported		Worksite		Not Worksite	
		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT
Teachers	N	96	48	1309	1028	60	57	49	27	71	28	1225	964	63	47	1342	1029
	MEAN	5477	2829	5618	4854	5019	-563	5204	4152	5197	3850	5677	5122	2632	-2.52	5748	4981
	STD	4700	4363	4765	5324	4070	6530	4221	5101	4068	6346	4847	5019	3628	5687	4761	5180
Assistants	N	78	95	741	700	55	110	37	42	54	43	673	600	62	40	757	755
	MEAN	4622	2704	3658	3523	2204	1481	5306	4032	3532	3230	3808	3753	2274	1968	3871	3503
	STD	3215	3262	3434	4052	2729	3668	3460	4098	2342	3811	3502	3934	3085	2646	3424	4017
Teacher-Directors	N	13	2	107	83	4	8	6	1	7	3	103	73	4	5	116	80
	MEAN	4262	-8770	5537	3145	4271	-7936	6565	-6309	-900	-3160	5803	4422	6088	-9576	5375	3642
	STD	7418	7270	5221	8454	8032	6603	3567	NA	6926	10559	5160	7781	1940	7259	5560	8080
Admin.-Directors	N	46	18	232	220	25	16	22	13	19	13	212	196	9	6	269	232
	MEAN	2125	174.5	3953	3129	-2926	-1540	5105	-49.6	7862	-816	3898	3712	1913	-871	3709	3003
	STD	9362	10127	7891	10650	8804	14093	8130	7216	5158	10765	7925	10377	4218	12764	8260	10574

Annual Foregone Earnings	ANOVAS (Public Funding and Special Reg.) F-tests			ANOVAS (Publicly Supported) F-tests			ANOVAS (Worksite) F-tests		
	Special Regulation	State	Inter-action	Funding Source	State	Interaction	Worksite	State	Interaction
Teachers	5.70* Reg < Not Reg	14.14*** CA&CT < CO&NC	4.32* Diff. > CA&CT	16.10*** Pub < Others	20.90*** CA&CT < CO&NC	9.69*** Only in CA&CT	69.36*** Work < Not	12.23*** CA&CT < CO&NC	3.69
Assistants	0.06	11.80*** CA&CT<CO&NC	8.90** CA&CT: Not > Reg CO&NC: Reg > Not	14.72*** Pub < Others Fees, Not < Multi	3.38	0.99	16.49*** Work < Not	0.76	0.01
Teacher-Directors	6.18* Reg < Not Reg	8.45** CA&CT<CO&NC	4.02* Diff. > CA&CT	7.33*** Pub,Fee < None	9.77** CA&CT<CO&NC	3.17* CA&CT: Others < Not	7.47** Work < Not	14.45*** CA&CT < CO&NC	9.27*** Diff. > CA&CT
Admin.-Directors	3.03	1.02	0.17	5.19** Pub < Others	5.18* CA&CT < CO&NC	2.83* CA&CT: Others < Not CO&NC: Fee Higher	1.28	0.48	0.17

See notes for Table 11.1

Table 11.11

Teacher Benefits by Source of Financial Support

		MEANS BY FUNDING SOURCE AND STATE PAIRS															
		Public Funding and Special Regulation				Publicly Supported											
		Special		Not		Public Auspice		Multiple Sources		Fee Only		Not Publicly Supported		Worksite		Not Worksite	
		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT
# Benefit (max = 8)	N	17	11	180	190	12	15	10	7	18	11	157	168	7	9	190	192
	MEAN	3.47	5.09	2.80	2.58	4.67	5.60	3.70	4.29	1.94	3.82	2.77	2.32	4.43	5.44	2.80	2.59
	STD	1.62	1.51	1.97	2.06	1.37	1.35	0.82	1.60	1.70	2.14	1.97	1.92	1.27	1.74	1.95	2.04
# Working Conditions (max = 12)	MEAN	8.88	7.82	8.46	7.88	7.75	7.73	8.80	9.43	7.44	7.09	8.65	7.88	7.29	8.22	8.54	7.86
	STD	2.06	1.83	1.96	2.28	1.42	1.62	2.30	1.40	1.82	2.39	1.96	2.31	1.80	1.39	1.96	2.29
Prop. of Centers with Health Insurance	MEAN	0.88	1.00	0.60	0.62	1.00	1.00	1.00	0.86	0.56	0.82	0.58	0.59	1.00	1.00	0.61	0.63
	STD	0.33	0.00	0.49	0.49	0.00	0.00	0.00	0.38	0.51	0.40	0.49	0.49	0.00	0.00	0.49	0.49
Prop. of Centers with Maternity Leave	MEAN	0.24	0.36	0.16	0.13	0.17	0.47	0.10	0.29	0.06	0.18	0.18	0.10	0.00	0.33	0.17	0.13
	STD	0.44	0.50	0.37	0.33	0.39	0.52	0.32	0.49	0.24	0.40	0.39	0.30	0.00	0.50	0.38	0.34
Prop. of Centers with Child Care Discount	MEAN	0.53	0.27	0.84	0.69	0.50	0.13	0.40	0.57	0.67	0.36	0.88	0.74	0.14	0.44	0.84	0.68
	STD	0.51	0.47	0.37	0.46	0.52	0.35	0.52	0.53	0.49	0.50	0.33	0.44	0.38	0.53	0.37	0.47

	ANOVAS (Public Funding and Special Reg.) F-tests			ANOVAS (Publicly Supported) F-tests			ANOVAS (Worksite) F-tests		
	Special Regulation	State	Inter-action	Funding Source	State	Interaction	Worksite	State	Interaction
# Benefit (max = 8)	15.93*** Reg > Not Reg	3.08	5.33* Diff. > CA&CT	17.76*** Pub > Fee, Not Multi > Not	4.41* CA&CT>CO&NC	4.24** Fee Low in CO&NC	19.40*** Work > Not	0.62	1.45
# Working Conditions (max = 12)	0.19	3.73	0.33	3.35* Multi > Pub, Fee Not > Fee	0.11	0.85	0.67	0.06	2.20
Prop. of Centers with Health Insurance	11.90*** Reg > Not Reg	0.51	0.27	8.84*** Pub. > Fee, Not Multi > Not	0.13 CA&CT > CO&NC	0.80	9.61** Work > Not	0.00	0.00
Prop. of Centers with Maternity Leave	4.68* Reg > Not Reg	0.42	1.28	2.12	4.01* CA&CT > CO&NC	3.48* CA&CT: Pub > Not	0.03	2.45	4.15* CO&NC: Not > Work CA&CT: Work > Not
Prop. of Centers with Child Care Discount	18.12*** Not Reg > Reg	5.67* CO&NC > CA&CT	0.40	17.61*** Not > Others	4.47* CO&NC > CA&CT	1.82	18.02*** Not > Work	0.42	4.47* Diff. > CO&NC

See notes for Table 11.1

Table 11.12

Assistants Benefits by Source of Financial Support

		MEANS BY FUNDING SOURCE AND STATE PAIRS															
		Public Funding and Special Regulation				Publicly Supported											
		Special		Not		Public Auspice		Multiple Sources		Fee Only		Not Publicly Supported		Worksite		Not Worksite	
		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT
	N	17	11	180	190	12	15	10	7	18	11	157	168	7	9	190	192
# Benefit (max = 8)	MEAN	3.35	4.45	2.22	1.92	2.33	4.13	3.70	3.71	1.67	3.45	2.30	1.71	0.86	4.00	2.37	1.96
	STD	1.80	1.75	2.08	2.06	2.61	2.67	0.82	1.60	1.57	2.34	2.12	1.90	1.86	2.55	2.07	2.06
# Working Conditions (max = 12)	MEAN	8.29	7.64	6.69	6.25	5.00	6.27	8.80	9.29	5.61	6.09	6.98	6.22	2.43	7.00	6.99	6.29
	STD	3.02	2.06	3.75	3.69	3.46	3.39	2.30	1.50	3.40	3.75	3.77	3.67	2.57	2.92	3.66	3.66
Prop. of Centers with Health Insurance	MEAN	0.82	0.82	0.48	0.45	0.50	0.73	1.00	0.71	0.50	0.73	0.47	0.42	0.14	0.78	0.52	0.45
	STD	0.39	0.40	0.50	0.50	0.52	0.46	0.00	0.49	0.51	0.47	0.50	0.49	0.38	0.44	0.50	0.50
Prop. of Centers with Maternity Leave	MEAN	0.24	0.27	0.13	0.09	0.08	0.40	0.10	0.14	0.06	0.18	0.16	0.07	0.00	0.22	0.15	0.09
	STD	0.44	0.47	0.34	0.29	0.29	0.51	0.32	0.38	0.24	0.40	0.37	0.25	0.00	0.44	0.36	0.29
Prop. of Centers with Child Care Discount	MEAN	0.47	0.27	0.68	0.54	0.25	0.13	0.40	0.57	0.56	0.27	0.73	0.57	0.00	0.33	0.69	0.53
	STD	0.51	0.47	0.47	0.50	0.45	0.35	0.52	0.53	0.51	0.47	0.45	0.50	0.00	0.50	0.46	0.50

	ANOVAS (Public Funding and Special Reg.) F-tests			ANOVAS (Publicly Supported) F-tests			ANOVAS (Worksite) F-tests		
	Special Regulation	State	Inter-action	Funding Source	State	Interaction	Worksite	State	Interaction
# Benefit (max = 8)	19.94*** Reg > Not Reg	0.95	2.90	6.67*** Multi, Pub > Not	4.02* CA&CT > CO&NC	5.38** Diff. > CA&CT	0.24	6.58* CA&CT > CO&NC	11.05*** CA&CT: Work > Not CO&NC: Not > Work
# Working Conditions (max = 12)	4.17* Reg > Not Reg	0.56	0.02	3.49* Multi > Others	0.30	0.93	4.26* Not > Work	4.31* CA&CT > CO&NC	7.97** CA&CT: Work > Not CO&NC: Not > Work
Prop. of Centers with Health Insurance	13.23*** Reg > Not Reg	0.03	0.01	5.11** Multi > Not	0.10	1.72	0.04	4.96* CA&CT > CO&NC	7.50** CA&CT: Work > Not CO&NC: Not > Work
Prop. of Centers with Maternity Leave	4.81* Reg > Not Reg	0.00	0.39	1.34	2.71	4.20** Pub Higher in CA&CT	0.01	1.01	2.72
Prop. of Centers with Child Care Discount	6.03* Not Reg > Reg	3.14	0.07	9.50*** Multi, Not > Pub Not > Fee	1.19	0.83	12.97** Not > Work	0.50	3.98* Diff. > CO&NC

See notes for Table 11.1

Table 11.13a
Classroom Structure and Process Quality by Auspice

		MEANS BY AUSPICES AND STATE PAIRS											
		Nonprofit						For-profit					
		Independent		Church		Public		Independent		Local Chain		Nat. System	
		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT
% of Teachers with AA or More	N	47	45	38	38	12	14	53	72	11	14	35	13
	MEAN	0.45	0.62	0.31	0.40	0.73	0.67	0.27	0.45	0.42	0.49	0.29	0.38
	STD	0.33	0.38	0.30	0.34	0.40	0.41	0.33	0.34	0.34	0.38	0.25	0.24
% of Assistants with at Least CDA or More		40	40	33	28	11	14	39	62	11	11	26	10
	MEAN	0.43	0.59	0.30	0.52	0.62	0.56	0.39	0.44	0.34	0.61	0.43	0.70
	STD	0.35	0.38	0.28	0.33	0.39	0.35	0.39	0.37	0.27	0.40	0.34	0.35
Teachers Years of Education		47	45	38	38	12	14	53	72	11	14	35	13
	MEAN	14.2	14.8	13.9	14.0	14.9	15.1	13.5	14.3	14.0	14.1	13.7	13.9
	STD	1.2	1.6	1.1	1.3	1.0	1.3	1.6	1.3	1.3	1.2	1.1	1.0
Assistants Years of Education		40	40	33	28	11	14	39	62	11	11	26	10
	MEAN	12.9	12.8	12.6	12.7	13.0	13.1	12.6	13.0	12.4	13.0	13.1	13.3
	STD	1.3	1.6	1.3	0.9	3.3	1.0	1.3	1.1	1.0	1.7	1.1	1.2
Teachers Months of Tenure		47	45	38	38	12	14	53	72	11	14	35	13
	MEAN	39.7	65.6	46.3	58.1	32.8	68.5	29.3	41.5	18.6	50.3	23.8	22.6
	STD	36.9	51.2	36.0	32.4	23.2	51.0	24.1	30.7	12.8	26.3	13.7	8.1
Assistants Months of Tenure		40	40	33	28	11	14	39	62	11	11	26	10
	MEAN	20.8	45.2	32.4	42.8	32.6	43.6	11.9	24.5	8.9	17.7	9.0	14.6
	STD	22.4	38.5	35.7	35.0	29.5	39.6	13.3	19.4	4.2	10.8	6.7	10.8

	ANOVAS (Nonprofit) F-tests			ANOVAS (For-profit) F-tests		
	Auspice	State	State x Auspice	Auspice	State	State x Auspice
% of Teachers with AA or More	11.18^{***} P > I > C	1.24	1.20	1.26	3.69	0.54
% of Assistants with at Least CDA or More	2.80	3.00	1.44	1.91	7.09^{**}	1.47
Teachers Years of Education	7.36^{***} P, I > C	1.81	0.88	0.36	2.08	1.21
Assistants Years of Education	0.70	0.00	0.12	1.45	2.71	0.22
Teachers Months of Tenure	0.03	13.22^{***} CA&CT > CO&NC	1.09	3.67^{*} I, L > N	10.20^{**} CA&CT > CO&NC	3.38^{*} L High in CA&CT L Low in CO&NC
Assistants Months of Tenure	0.42	6.68^{*} CA&CT > CO&NC	0.88	2.56	9.22^{**} CA&CT > CO&NC	0.68

See notes for table 11.1

Table 11.13b

Classroom Structure and Process Quality by Auspice

		MEANS BY AUSPICES AND STATE PAIRS											
		Nonprofit						For-profit					
		Independent		Church		Public		Independent		Local Chain		Nat. System	
		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT
		49	45	38	38	13	15	52	71	11	14	35	13
Adult : Child Ratio Mid-morning	MEAN	0.18	0.26	0.20	0.17	0.22	0.29	0.14	0.19	0.14	0.15	0.17	0.11
	STD	0.11	0.15	0.24	0.10	0.10	0.19	0.08	0.16	0.08	0.08	0.12	0.05
		49	45	38	38	13	15	52	71	11	14	35	13
Observed Group Size Mid-morning	MEAN	12.94	11.64	12.97	12.47	13.31	14.67	11.40	12.63	13.73	15.79	12.63	14.38
	STD	5.51	6.12	6.50	4.82	5.78	7.44	5.97	7.12	11.07	12.10	11.03	6.27
		49	46	38	37	13	15	54	73	11	14	35	13
Center Quality Index	MEAN	4.02	4.35	3.68	4.16	4.75	4.73	3.46	4.27	3.29	4.02	3.60	4.40
	STD	0.77	0.92	0.72	0.77	0.74	0.64	0.70	0.82	0.59	0.86	0.83	0.47

	ANOVAS (Nonprofit) F-tests			ANOVAS (For-profit) F-tests		
	Auspice	State	State x Auspice	Auspice	State	State x Auspice
Adult : Child Ratio Mid-morning	2.37	2.47	2.05	1.18	0.00	3.08* CA&CT: I > N CO&NC: N > I
Observed Group Size Mid-morning	0.89	0.02	0.55	1.34	1.23	0.03
Center Quality Index	11.10*** P > I > C	4.23* CA&CT > CO&NC	1.01	1.57	31.40*** CA&CT > CO&NC	0.02

See notes for table 11.1

Table 11.14a

Classroom Structure and Process Quality by Source of Financial Support
Means by Funding Source and State Pairs

Teaching Staff		Public Funding and Special Regulation				MEANS BY FUNDING SOURCE AND STATE PAIRS: Publicly Supported											
		Special		Not		Public Auspice		Multiple Sources		Fee Only		Not Publicly Supported		Worksite		Not Worksite	
		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT
% of Teachers with at least AA	N	18	11	178	185	12	14	10	7	17	11	157	164	7	8	189	188
	MEAN	0.53	0.73	0.34	0.48	0.73	0.67	0.38	0.75	0.29	0.65	0.34	0.46	0.79	0.65	0.34	0.49
	STD	0.39	0.35	0.32	0.36	0.40	0.41	0.31	0.36	0.38	0.39	0.31	0.35	0.30	0.42	0.32	0.36
% of Assistants with at Least CDA	N	16	11	144	154	11	14	7	7	15	10	127	134	5	9	155	156
	MEAN	0.44	0.76	0.40	0.51	0.62	0.56	0.34	0.69	0.23	0.59	0.40	0.51	0.76	0.43	0.39	0.53
	STD	0.36	0.25	0.35	0.37	0.39	0.35	0.36	0.37	0.31	0.39	0.34	0.37	0.27	0.47	0.35	0.36
Teachers Years of Education	N	18	11	178	185	12	14	10	7	17	11	157	164	7	8	189	188
	MEAN	14.5	15.4	13.8	14.3	14.9	15.1	14.2	15.3	13.4	14.9	13.9	14.2	14.4	15.0	13.9	14.3
	STD	1.4	1.5	1.3	1.4	1.0	1.3	1.3	1.7	1.5	2.0	1.3	1.3	1.0	1.7	1.3	1.4
Assistants Years of Education	N	16	11	144	154	11	14	7	7	15	10	127	134	5	9	155	156
	MEAN	12.8	13.3	12.8	12.9	13.0	13.1	12.9	12.9	12.1	12.8	12.9	12.9	13.6	13.6	12.8	12.9
	STD	0.9	1.1	1.5	1.3	3.3	1.0	0.9	1.5	0.6	0.8	1.3	1.3	1.5	1.6	1.5	1.2
Teachers Months of Tenure	N	18	11	178	185	12	14	10	7	17	11	157	164	7	8	189	188
	MEAN	43.8	103.5	32.7	48.5	32.8	68.5	46.4	90.7	41.5	76.6	32.2	46.8	41.1	64.8	33.5	51.0
	STD	54.3	46.2	25.7	36.4	23.2	51.0	41.4	60.6	37.1	49.2	28.1	34.3	23.4	35.0	29.7	39.2
Assistants Months of Tenure	N	16	11	144	154	11	14	7	7	15	10	127	134	5	9	155	156
	MEAN	32.4	76.8	17.6	30.1	32.6	43.6	17.3	71.3	17.3	60.7	18.2	28.1	20.2	22.7	19.1	33.8
	STD	33.3	53.3	22.3	26.4	29.5	39.6	8.5	55.9	28.9	48.6	23.2	23.6	11.3	21.8	24.2	31.4

Teaching Staff	ANOVAS (Public Funding with Special Reg.) F-tests		ANOVAS (Publicly Supported) F-tests			ANOVAS (Worksite) F-tests		
	Special Regulation	State x Regulation	Funding Source	State	State x Funding	Worksite	State	State x Worksite
% of Teachers with at least AA	10.26** Reg > Not Reg	0.19	7.64*** Pub > Fee, Not Multi > Not	9.68** CA&CT > CO&NC	2.49	11.36*** Work > Not	0.00	2.49
% of Assistants with at Least CDA	4.08* Reg > Not Reg	1.97	1.24	7.04** CA&CT > CO&NC	1.93	1.81	0.89	5.55* CA&CT: Not > Work CO&NC: Work > Not
Teachers Years of Education	10.76** Reg > Not Reg	0.55	5.40** Pub > Fee, Not Multi > Not	10.34** CA&CT > CO&NC	2.09	2.97	2.13	0.02
Assistants Years of Education	0.54	0.40	1.02	0.76	0.46	3.88* Work > Not	0.01	0.05
Teachers Months of Tenure	24.95*** Reg > Not Reg	10.99*** Diff > CA&CT	6.77*** Multi, Fee > Not	26.37*** CA&CT > CO&NC	2.25	1.38	5.08* CA&CT > CO&NC	0.11
Assistants Months of Tenure	32.71*** Reg > Not Reg	8.84** Diff > CA&CT	6.83*** Others > Not	31.49*** CA&CT > CO&NC	5.67*** Diff. > CA&CT	0.40	1.19	0.60

See notes for table 11.1

Table 11.14b

Classroom Structure and Process Quality by Source of Financial Support

		MEANS BY FUNDING SOURCE AND STATE PAIRS															
		Public Funding and Special Regulation				Publicly Supported											
		Special		Not		Public Auspice		Multiple Sources		Fee Only		Not Publicly Supported		Worksite		Not Worksite	
		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT
	N	19	11	179	185	13	15	10	7	18	11	157	163	7	9	191	187
Adult Child Ratio Mid-morning	MEAN	0.20	0.27	0.17	0.20	0.22	0.29	0.17	0.20	0.16	0.34	0.17	0.19	0.18	0.27	0.17	0.20
	STD	0.12	0.20	0.14	0.14	0.10	0.19	0.08	0.06	0.11	0.23	0.15	0.13	0.12	0.18	0.14	0.14
Observed Group Size Mid-morning	MEAN	13.53	10.82	12.45	12.99	13.31	14.67	14.90	11.57	11.61	9.73	12.45	12.98	13.00	12.67	12.54	12.88
	STD	5.28	3.92	7.57	7.10	5.78	7.44	5.78	4.35	5.44	3.80	7.77	7.15	6.08	6.93	7.43	6.99
Center Quality Index	MEAN	4.05	4.71	3.71	4.27	4.75	4.73	3.80	3.91	3.38	4.42	3.69	4.26	4.77	4.75	3.70	4.27
	STD	0.95	0.62	0.79	0.82	0.74	0.64	0.73	0.90	0.81	0.66	0.76	0.83	0.71	0.69	0.79	0.82

	ANOVAS (Public Funding with Special Reg.) F-tests			ANOVAS (Publicly Supported) F-tests			ANOVAS (Worksite) F-tests		
	Special Regulation	State	State x Regulation	Funding Source	State	State x Funding	Worksite	State	State x Worksite
Adult Child Ratio Mid-morning	2.85	3.25	0.59	4.44** Pub, Fee > Not	7.89** CA&CT > CO&NC	3.18* CO&NC Fee = Not	5.67*	1.98	0.08
Observed Group Size Mid-morning	0.15	0.59	1.32	1.05	0.39	0.63	0.07	0.32	0.03
Center Quality Index	6.09* Reg > Not Reg	14.63*** CA&CT > CO&NC	0.08	8.55*** Pub > Others	8.63** CA&CT > CO&NC	2.54	14.16** Work > Not	1.78	2.07

See notes for table 11.1

Table 11.15

Expended Cost Per Child Hour by Auspice

		MEANS BY AUSPICES AND STATE PAIRS														
		Nonprofit							For-profit							
		Independent		Church		Public		All	Independent		Local Chain		Nat. System		All
		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	
	N	48	47	38	38	12	15	198	54	74	11	14	35	13	201
Labor cost	MEAN	$1.37	$2.36	$1.11	$1.60	$1.66	$2.65	$1.71	$0.94	$1.57	$1.03	$1.39	$0.94	$1.41	$1.24
	STD	0.57	1.16	0.34	0.74	0.81	1.04	0.95	0.56	0.80	0.38	1.00	0.53	0.51	0.74
Occupancy Cost	MEAN	0.21	0.22	0.08	0.17	0.07	0.07	0.16	0.29	0.40	0.32	0.54	0.47	0.59	0.40
	STD	0.16	0.17	0.11	0.14	0.12	0.10	0.16	0.23	0.26	0.14	0.62	0.32	0.17	0.30
Total Expended Cost	MEAN	1.95	2.96	1.40	1.95	2.04	3.01	2.17	1.58	2.32	1.66	2.40	1.79	2.37	2.00
	STD	0.77	1.23	0.45	0.90	0.89	1.16	1.08	0.90	0.86	0.66	1.63	1.01	0.59	1.00

	ANOVAS (Nonprofit) F-tests			ANOVAS (For-profit) F-tests		
	Auspice	State	State x Auspice	Auspice	State	State x Auspice
Labor cost	13.39*** P, I > C	38.64*** CA&CT > CO&NC	2.27	0.21	15.43*** CA&CT > CO&NC	0.53
Occupancy Cost	14.34*** I, C > P	1.46	1.62	5.85** N > I	7.87** CA&CT > CO&NC	0.38
Total Expended Cost	17.59*** P, I > C	30.84*** CA&CT > CO&NC	1.37	0.31	15.79*** CA&CT > CO&NC	0.11

See notes for Table 11.1

Table 11.16

Revenue Per Child Hour by Auspice

		MEANS BY AUSPICES AND STATE PAIRS													
		Nonprofit							For-profit						
		Independent		Church		Public		All	Independent		Local Chain		Nat. System		All
		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	
	N	47	46	38	38	11	15	195	54	74	11	14	35	13	201
Parent Fees	MEAN	$0.87	$1.58	$1.27	$1.71	$0.92	$0.89	$1.28	$1.36	$2.19	$1.42	$2.40	$1.60	$2.40	$1.85
	STD	0.71	1.36	0.46	0.80	0.66	0.95	0.96	0.92	0.80	0.59	1.27	0.98	0.69	0.97
Public Support	MEAN	0.87	1.17	0.15	0.20	1.15	1.80	0.76	0.32	0.16	0.27	0.08	0.24	0.05	0.21
	STD	0.95	1.38	0.27	0.47	1.21	1.07	1.07	0.34	0.31	0.31	0.13	0.24	0.07	0.30
Total Revenue (1)	MEAN	2.00	3.02	1.48	2.03	2.10	3.10	2.24	1.71	2.42	1.71	2.51	1.83	2.46	2.10
	STD	0.82	1.32	0.47	0.83	0.92	1.49	1.13	0.88	0.89	0.48	1.34	0.94	0.68	0.96
Surplus/Deficit	MEAN	0.05	0.06	0.08	0.07	0.06	0.09	0.07	0.12	0.10	0.06	0.11	0.04	0.09	0.09
	STD	0.37	0.39	0.18	0.27	0.10	0.94	0.39	0.29	0.31	0.26	0.55	0.29	0.40	0.32

	ANOVAS (Nonprofit) F-tests			ANOVAS (For-profit) F-tests		
	Auspice	State	State x Auspice	Auspice	State	State x Auspice
Parent Fees	4.39* C > P, I	5.98* CA&CT > CO&NC	1.76	1.03	28.67*** CA&CT > CO&NC	0.08
Public Support	25.65*** P, C > I	4.58	1.03	1.88	11.42*** CO&NC > CA&CT	0.03
Total Revenue	15.18*** P, I > C	27.67*** CA&CT > CO&NC	1.33	0.14	18.68*** CA&CT > CO&NC	0.07
Surplus/Deficit	0.1	0.1	0.1	0.34	0.22	0.00

See notes for Table 11.1
Note 1: includes other categories, not tabled.

Table 11.17

Subsidies and Full Cost Per Child Hour by Auspice

		MEANS BY AUSPICES AND STATE PAIRS													
		Nonprofit							For-profit						
		Independent		Church		Public		All	Independent		Local Chain		Nat. System		All
		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	
	N	48	47	38	38	12	15	198	54	74	11	14	35	13	201
Volunteers	MEAN	$0.06	$0.09	$0.02	$0.03	$0.08	$0.15	$0.06	$0.03	$0.03	$0.00	$0.01	$0.00	$0.00	$0.02
	STD	0.14	0.15	0.05	0.05	0.15	0.20	0.13	0.07	0.08	0.02	0.03	0.00	0.01	0.06
Occupancy Donation	MEAN	0.10	0.27	0.16	0.28	0.35	0.37	0.22	0.02	0.13	0.00	0.10	0.00	0.01	0.06
	STD	0.15	0.41	0.10	0.31	0.34	0.35	0.30	0.04	0.57	0.00	0.27	0.01	0.04	0.36
Total In-kind Donation	MEAN	0.19	0.36	0.19	0.33	0.48	0.56	0.31	0.05	0.18	0.01	0.13	0.01	0.02	0.09
	STD	0.26	0.46	0.11	0.32	0.41	0.43	0.36	0.10	0.61	0.02	0.29	0.01	0.04	0.39
	N	43	44	37	36	12	15	187	51	73	11	14	33	13	195
Foregone Earnings and Benefits	MEAN	0.64	0.54	0.57	0.68	0.35	-0.08	0.54	0.52	0.51	0.60	0.73	0.57	0.66	0.55
	STD	0.39	0.67	0.23	0.43	0.57	0.94	0.56	0.37	0.39	0.28	0.93	0.43	0.27	0.44
	N	48	47	38	38	12	15	198	54	74	11	14	35	13	201
Full Cost	MEAN	2.72	3.86	2.14	2.93	2.87	3.49	2.99	2.11	3.01	2.27	3.25	2.34	3.05	2.63
	STD	0.95	1.71	0.57	1.18	1.19	1.30	1.33	1.04	1.32	0.91	2.73	1.42	0.81	1.42

	ANOVAS (Nonprofit) F-tests			ANOVAS (For-profit) F-tests		
	Auspice	State	State x Auspice	Auspice	State	State x Auspice
Volunteers	6.24** Others > C	2.58	0.67	3.47* I > N	0.28	0.03
Occupancy Donation	4.01* P > Others	4.88* CA&CT > CO&NC	0.68	0.55	1.37	0.33
Total In-kind Donation	5.81** P > Others	5.96* CA&CT > CO&NC	0.29	1.11	1.63	0.42
Foregone Earnings and Benefits	9.39*** Others > P	2.42	2.66	1.67	0.73	0.30
Full Cost	8.57** Others > C	18.20*** CA&CT > CO&NC	0.7	0.29	11.92** CA&CT > CO&NC	0.10

See notes for Table 11.1

Table 11.18

Expended Cost Per Child Hour by Source of Financial Support

		MEANS BY FUNDING SOURCE AND STATE PAIRS															
		Public Funding with Special Regulation				Publicly Supported											
		Special		Not		Public Auspice		Multiple Sources		Fee Only		Not Publicly Supported		Worksite		Not Worksite	
		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT
	N	17	11	181	190	12	15	11	7	18	14	157	165	7	9	191	192
Labor cost	MEAN	$1.74	$2.48	$1.07	$1.78	$1.66	$2.65	$1.56	$2.52	$1.00	$2.46	$1.07	$1.66	$1.34	$3.23	$1.12	$1.75
	STD	0.68	0.77	0.52	0.99	0.81	1.04	0.59	0.78	0.43	0.92	0.53	0.93	0.44	1.40	0.57	0.92
Occupancy Cost	MEAN	0.24	0.18	0.25	0.32	0.07	0.07	0.30	0.29	0.19	0.27	0.27	0.34	0.01	0.03	0.26	0.33
	STD	0.18	0.09	0.25	0.30	0.12	0.10	0.18	0.13	0.14	0.20	0.26	0.31	0.02	0.05	0.24	0.29
Total Cost (1)	MEAN	2.44	2.91	1.64	2.43	2.04	3.01	2.32	3.23	1.58	3.10	1.65	2.32	1.68	3.51	1.71	2.41
	STD	0.82	0.92	0.80	1.10	0.89	1.16	0.83	0.83	0.56	0.97	0.83	1.07	0.53	1.50	0.84	1.05

	ANOVAS (Public Funding with Special Reg.) F-tests			ANOVAS (Publicly Supported) F-tests			ANOVAS (Worksite) F-tests		
	Special Regulation	State	Inter-action	Funding Source	State	Interaction	Worksite	State	Interaction
Labor cost	18.57*** Reg > Not	20.92*** CA&CT > CO&NC	0.00	13.62*** Others > Not	52.24*** CA&CT > CO&NC	3.60* CA&CT: Fee > Not CO&NC: Fee = Not	18.04*** Work > Not	39.66*** CA&CT > CO&NC	9.74** Diff. > CA&CT
Occupancy Cost	2.01	0.01	1.31	7.01*** Others > Pub	0.60	0.25	16.08*** Work < Not	0.37	0.10
Total Cost	11.16*** Reg > Not	11	0.72	6.86*** Others > Not	35.34*** CA&CT > CO&NC	2.06	4.74* Work > Not	26.35*** CA&CT > CO&NC	5.16* CO&NC: Work = Not

See notes for Table 11.1
Note 1: includes other categories, not tabled.

Table 11.19

Revenue Per Child Hour by Source of Financial Support

		MEANS BY FUNDING SOURCE AND STATE PAIRS															
		Public Funding and Special Regulation				Publicly Supported											
		Special		Not		Public Auspice		Multiple Sources		Fee Only		Not Publicly Supported		Worksite		Not Worksite	
		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT
Parent Fees	N	17	10	179	190	11	15	11	6	17	14	157	165	7	9	189	191
	MEAN	$0.42	$0.79	$1.32	$1.95	$0.92	$0.89	$0.34	$0.56	$0.41	$0.40	$1.42	$2.15	$1.13	$2.36	$1.25	$1.86
	STD	0.30	0.52	0.80	1.06	0.66	0.95	0.30	0.34	0.30	0.43	0.78	0.94	0.54	1.37	0.82	1.05
Public Support	N	17	11	181	190	12	15	11	7	18	14	157	165	7	9	191	192
	MEAN	1.99	2.11	0.31	0.42	1.15	1.80	1.98	2.81	1.14	2.50	0.22	0.13	0.22	0.43	0.46	0.52
	STD	0.89	0.96	0.44	0.87	1.21	1.07	0.86	0.91	0.68	0.82	0.27	0.26	0.17	0.64	0.69	0.97
Total Revenue (1)	MEAN	2.61	3.02	1.70	2.52	2.10	3.10	2.43	3.50	1.64	3.17	1.73	2.40	1.61	3.87	1.79	2.48
	STD	0.79	0.90	0.77	1.13	0.92	1.49	1.00	1.03	0.71	1.00	0.78	1.05	0.57	2.08	0.82	1.02
Surplus/Deficit	MEAN	0.17	0.10	0.07	0.08	0.08	0.09	0.11	0.27	0.06	0.08	0.08	0.08	-0.07	0.36	0.08	0.07
	STD	0.33	0.20	0.28	0.43	0.10	0.94	0.54	0.34	0.37	0.39	0.26	0.35	0.08	1.04	0.29	0.37

	ANOVAS (Public Funding with Special Reg.) F-tests			ANOVAS (Publicly Supported) F-tests			ANOVAS (Worksite) F-tests		
	Special Regulation	State	Inter-action	Funding Source	State	Interaction	Worksite	State	Interaction
Parent Fees	29.84^{***} Reg < Not	6.83^{**} CA&CT > CO&NC	0.40	43.17^{***} Not > Others Pub > Fees	2.25	3.67^{*} Diff. > CA&CT	0.58	14.33^{**} CA&CT > CO&NC	1.61
Public Support	139.25^{***} Reg > Not	0.63	0	275.84^{***} Multi>Fee>Pub>Not	68.14^{***} CA&CT > CO&NC	30.43^{***} Diff. > CA&CT	0.6	0.37	0.12
Total Revenue	13.31^{***} Reg > Not	10.04	1.15	7.77^{***} Pub, Multi > Not	38.75^{***} CA&CT > CO&NC	2.23	6.03^{*} Work > Not	35.82^{***} CA&CT > CO&NC	9.98^{**} CO&NC: Not > Work
Surplus/Deficit	0.76	0.12	0.37	0.55	0.68	0.29	0.56 Work > Not	5.31^{*} CA&CT > CO&NC	5.73^{*} CO&NC: Not > Work

See notes for table 11.1

Note 1: includes other categories, not tabled.

Table 11.20

Subsidies and Full Cost Per Child Hour by Source of Financial Support

		MEANS BY FUNDING SOURCE AND STATE PAIRS															
		Public Funding and Special Regulation				Publicly Supported											
		Special		Not		Public Auspice		Multiple Sources		Fee Only		Not publicly supported		Worksite		Not Worksite	
		CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT	CO&NC	CA&CT
	N	17	11	181	190	12	15	11	7	18	14	157	165	7	9	191	192
Volunteers	MEAN	$0.07	$0.12	$0.03	$0.05	0.08	0.15	0.04	0.09	0.03	0.14	0.03	0.03	$0.09	$0.06	$0.03	$0.05
	STD	0.07	0.16	0.09	0.11	0.15	0.20	0.06	0.14	0.05	0.24	0.09	0.07	0.17	0.15	0.09	0.11
Occupancy Donation	MEAN	0.20	0.43	0.07	0.19	0.35	0.37	0.09	0.43	0.07	0.37	0.06	0.16	0.34	1.15	0.07	0.16
	STD	0.30	0.44	0.13	0.44	0.34	0.35	0.13	0.57	0.13	0.48	0.11	0.44	0.25	1.25	0.14	0.31
Total In-kind Donations	MEAN	0.28	0.59	0.11	0.25	0.48	0.56	0.14	0.57	0.11	0.54	0.10	0.21	0.45	1.31	0.11	0.22
	STD	0.33	0.43	0.19	0.49	0.41	0.43	0.16	0.64	0.14	0.59	0.18	0.47	0.38	1.25	0.20	0.37
	N	15	10	172	185	12	15	9	7	18	13	148	160	7	9	180	186
Foregone Earnings and Benefits	MEAN	0.67	0.31	0.55	0.54	0.35	-0.08	0.76	0.38	0.53	0.45	0.57	0.60	0.36	-0.23	0.57	0.57
	STD	0.41	0.35	0.37	0.60	0.57	0.94	0.27	0.54	0.30	0.40	0.36	0.54	0.12	0.75	0.38	0.56
	N	17	11	181	190	12	15	11	7	18	14	157	165	7	9	191	192
Full Cost	MEAN	3.31	3.79	2.27	3.22	2.87	3.49	3.08	4.18	2.23	4.06	2.29	3.12	2.49	4.59	2.36	3.19
	STD	0.89	1.03	1.02	1.55	1.19	1.30	1.00	1.73	0.72	1.12	1.06	1.54	0.85	2.38	1.06	1.46

	ANOVAS (Public Funding with Special Reg.) F-tests			ANOVAS (Publicly Supported) F-tests			ANOVAS (Worksite) F-tests		
	Special Regulation	State	Inter-action	Funding Source	State	Interaction	Worksite	State	Interaction
Volunteers	8.32** Reg > Not	3.55	1.09	8.89*** Pub, Fee > Not	10.57** CA&CT > CO&NC	3.46* Diff. > CA&CT	1.93	0.01	0.67
Occupancy Donation	7.76** Reg > Not	6.95** CA&CT > CO&NC	0.74	6.42** Pub > Not	10.31** CA&CT > CO&NC	1.74	68.52*** Work > Not	34.23*** CA&CT > CO&NC	22.50*** Diff. > CA&CT
Total In-kind Donations	11.57** Reg > Not	8.91** CA&CT > CO&NC	1.23	10.45*** Pub, Multi, Fee > Not	15.68*** CA&CT > CO&NC	2.71	64.35*** Work > Not	30.28*** CA&CT > CO&NC	18.28*** Diff. > CA&CT
Foregone Earnings and Benefits	0.32	2.99	2.74	7.28*** Other > Pub	5.75* CO&NC > CA&CT	2.67* Diff. > CA&CT	16.09*** Work < Not	5.68* CO&NC > CA&CT	5.70* Diff. > CA&CT
Full Cost	9.58** Reg > Not	7.47** CA&CT > CO&NC	0.82	4.44* Multi > Not	21.87*** CA&CT > CO&NC	1.58	5.32* Work > Not	19.33*** CA&CT > CO&NC	3.59

See notes for Table 11.1

Part 3

Introduction

This Part consists of three chapters that summarize results of the statistical analysis of the three major sets of relationships among cost, quality of child care and children's concurrent cognitive and social development. In terms of the conceptual structure depicted in Figure 2.1, it tests relationships *between* the Finances and the Classroom Quality domain, between the Classroom Quality and Classroom Structure domains, and among the Classroom Quality, Children, and Family domains. Included in the specifications of each of these models are variables related to the Center Structure domain to control for state, sector, auspice, and scope of the center programs.

PART 3 OUTLINE

Chapter 12 presents the results of the estimation of a cost function for child care centers. This cost variable function is based on the economic theory describing the cost minimizing behavior of competitive firms, adapted to the case of a mixed industry of for-profit and nonprofit ECE centers. It is concerned with the cost of producing, not the cost of purchasing child care services. The chapter describes the theoretical derivation of the function and presents estimation results. In particular, it discusses the relation between variable cost and quality of child care services. It also summarizes results testing for economies of scope and scale in the production of child care as well as for the responsiveness of the demand for labor to changes in market wages in the industry.

Chapter 13 investigates the relationship between the quality of child care services as estimated by the center quality index, and expected determinants of quality. Because of the cross-disciplinary nature of this research project parallel multi-variate regression analyses were completed: a linear hierarchical regression analysis favored by child development psychologists and educators, and an ordinary least squares estimation of a quality production function favored by economists. These analyses yield similar results, with some interesting differences. This chapter also reports the results of a discriminant analysis, a form of univariate analysis, to identify those characteristics of cost and quality which discriminate best between poor-, mediocre-, and good-quality centers.

Chapter 14 reports results of statistical analyses of the concurrent relationships between preschool children's cognitive and socio-emotional developmental outcomes and the quality of their child care. Children attended a subsample of classes observed in the cost and quality data collection who were in their next-to-last year of preschool. Hierarchical linear models were used to test whether each of six measures of child outcomes was related to classroom process quality, while controlling for the fixed effects of maternal education, child characteristics of gender and ethnicity, state, and sector, and child care center as a random-effect variable.

MAJOR FINDINGS

CHAPTER 12, THE COST OF PRODUCING ECE SERVICES

- No statistically significant differences in the short-run cost function in for-profit and nonprofit centers were detected, holding other determinants of cost constant. Furthermore, publicly operated centers and centers in national systems were not statistically distinguishable from the sample as a whole. These results indicate that there are no statistically significant efficiency differences between for-profit and nonprofit sectors in producing child care services.

- Nonprofit centers that received public funds, either from state or federal governments, which were tied to meeting higher standards than state minimum standards, had total variable costs that were 18% higher than other centers, keeping quality and other factors constant.

- It is not expensive to increase the quality of a typical child care center. It costs between 12 and 16 centers per child per hour to increase quality from average (quality index = 4) to good (quality index = 5).

- There is evidence of economies of scale in production. This means that an expansion in the hours served lowers costs. Also, it seems to be the case that centers serving a larger number of children have lower average costs of production.

- There is no evidence of economies of scope. Serving different age groups together is no more cost efficient than serving them separately.

- In the short-run, center demand for labor services is not very responsive to changes in wages. That is, where the hours of child care services are constant, increases in wage rates do not bring about much reduction in employment. In addition, it appears that while staff with some college education are substitutes for those with college degrees, staff with only a high school degree or less, are complements to staff with a baccalaureate degree.

CHAPTER 13, MODELS OF QUALITY IN EARLY CHILDHOOD CARE AND EDUCATION

- These analyses consistently support previous findings that adult:child ratios and level of staff education (in this case the percentage of staff with at least a baccalaureate degree) are related to quality. The two regression analyses indicated that the adult-child ratio is the single most important factor in determining child care quality.

- These analyses also provide intriguing evidence that characteristics of the center administrator influence child care quality. In particular, the amount of the administrator's experience is related to quality, as is her/his effective involvement with teachers in planning the children's curriculum. The discriminant analysis indicated that the administrator's level of education discriminated among poor-, mediocre-, and good-quality centers.

- Study results indicate that teacher turnover rates are negatively related to center process quality, although these results were more robust in the econometric than in the hierarchical regression estimations.

- Results provide further evidence that child care centers providing their teaching staff with higher wages also provide their children with higher quality care. The discriminant analysis indicated that mean teaching staff wage rates is the single most discriminating factor. Because of different approaches to entering wages into the multiple regression analyses, the hierarchical and econometric regressions yielded different wage effects. In the hierarchical regressions, holding all other factors constant, staff wages were significantly related to quality, whereas in the econometric model, which entered wages of staff by level of education, only the wage of staff with high school education or less was significantly related to quality.

- Significant, sector-, auspice-, and state-level differences in quality were found in both regression analyses. Since the two analyses involved slightly different specifications of these dummy variables, results were not directly comparable. The most consistent results indicate that, holding all other factors constant, church-affiliated centers had lower quality than other centers in most states. For-profit centers which were part of national systems had relatively higher quality than other for-profit centers (again, holding other factors constant).

- There was no significant difference in quality production functions between for-profits and nonprofits. However, there are enough hints of differences in coefficients and their significance levels that the comparison between sectors bears further investigation.

- Finally, it should be noted that the regression analyses accounted for about half of the variance in quality among centers. While this is quite satisfactory for cross-section analysis, like most such analyses, much of the difference in quality among centers is left unexplained. This casts some doubt on the reliability of both tests of significance and regression coefficients.

CHAPTER 14, CHILD CARE QUALITY AND CHILDREN'S DEVELOPMENTAL OUTCOMES

- A positive influence of child care quality was found across all areas of children's outcomes that were examined. The results indicated that children in better quality child care displayed more advanced language and pre-math skills, had more positive views of their child care situation and themselves, had better relationships with their teachers, and had more advanced prosocial skills. All of these forms of development are considered important to children's ability to enter school ready to learn.

- The positive effect of better quality care on children's cognitive and socio-emotional outcomes was found for boys and girls, for children from different ethnic backgrounds, and for children whose mothers had different levels of education.

- The strongest effect of child care quality was found for children's receptive language ability, and the next strongest for positive aspects of the teacher-child relationship.

- Higher quality child care was even more strongly related to better language abilities for some groups of minority children. For children whose mothers had relatively less education, there was an even stronger relationship between being in higher quality care and having more positive attitudes about their child care and their own competence.

- Some differences in the effects of quality were found by state, with stronger effects generally found for California than Colorado and North Carolina.

- The significant contribution of the present study is the consistent finding of a positive relationship for a variety of measures and across a wide-ranging sample of children from different socio-economic backgrounds.

Chapter 12

The Cost of Producing ECE Services

by H. NACI MOCAN

This chapter describes the theoretical background of short-run cost functions employed in the analysis. It describes the construction of the cost function developed for estimation, and presents estimation results for ECE centers based on the data collected in this study. The chapter is concerned with the costs of producing, not the cost of purchasing the services. As demonstrated in Chapter 8, costs to families are generally lower than the actual production costs.

THEORETICAL BACKGROUND

This theoretical introduction extends the discussion presented at the end of chapter 2 which introduced the conceptual structure of the study. The chapter tests statistically the relation between production costs and its determinants: the prices of inputs, the amount and quality of services produced, and other determinants discussed below. It therefore tests the hypotheses implied by the arrows in the Figure 2.1 which connect Center Structure, Classroom Structure, Classroom Process Quality, the Labor Market, and Center Costs.

In order to develop an adequate theory to test, it is necessary to combine insights from both child development and economic theory.

In economic theory, the cost function is logically deduced from characteristics of the center's production function. Therefore, it is first necessary to introduce the notion of a production function.

THE PRODUCTION FUNCTION

Child care centers employ various resources to produce child care services. The quality and the amount of child care services produced by the center is the *output*, and the resources that are employed to produce the output are the *inputs*.

The inputs are classified into two categories as *fixed* and *variable*. *Fixed inputs* are the ones that cannot be changed easily in the short-run. An example is the space occupied by the center. Because of contractual agreements and/or the cost of a move, a child care center cannot increase or decrease its space frequently. Consequently, it is assumed that space is fixed in the short-run (e.g., during a one-year period). This places a limit on the number of children who can be served and the maximum group size possible in each room. It can also affect the efficiency of the use of the variable inputs.

Variable inputs are the ones that can be changed in amounts used in the short-run. Since the center can adjust the use of labor by layoffs and new hires, labor constitutes a variable input. Food and materials are also examples of variable inputs. Thus, within capacity limits set by state law, the center can vary the number of children it serves and the quality of services by using different amounts of variable inputs.

The manner in which the variable inputs are combined with the fixed inputs to produce output may be considered the *production* *technology* of the child care center. The production technology in ECE involves decisions related to staffing ratios and staffing combinations, use of space, kinds of materials and equipment available for children's use, and the combinations of staff and materials or equipment used to provide services.

Different technologies can be used to produce a good or service. For instance, to dig a ditch, one could employ a team of workers with shovels, or one operator using a tractor and back hoe. The characteristic of production technology of interest to economists is its *efficiency*. The efficiency of a production process measures the output produced in a given time-period by a particular amount of inputs. A highly efficient process produces more output per hour or day with a given amount of resources than alternative technologies. Also, a given technology can be used more or less efficiently. That is, one crew of workers might complete the ditch in a day, whereas a second team might take a week using the same technology, shovels.

The discussion of efficiency must take into consideration both the quantity and the quality of the output, particularly in ECE where centers clearly differ in the quality of the service they provide. Consider two child care centers that employ the same amount of inputs. Assume the first one produces more child hours than the second one. If the quality of the output produced by the second center exceeds that of the first one, it cannot be said with certainty that the second center is less efficient, because the outputs they produce are not comparable to each other due to quality differentials. Thus, any discussion of the relative efficiency of child care centers must take into account the variations in quality of the service provided.

The relationship between inputs used by the center and the corresponding level of output is called the *production function*. The production function identifies how much output changes when inputs change, assuming a particular technology. The cost function to be developed below is derived from a production function for ECE services.

THE COST FUNCTION

Standard economic theory demonstrates that for a particular production function, there exists a corresponding *cost function* which gives the total cost of producing different levels of output using the technology embodied in the corresponding production function, assuming the firm minimizes costs. We investigate *total variable costs* of the firm, costs that change with the amount of output produced. In order to increase output in the short-run, the firm increases variable inputs. The total variable cost function shows how much variable costs increase when variable inputs and total output increase. In economic theory, a *short-run total variable cost function* is a function of the prices of the variable inputs and the quantity of services produced.

The reason to study a short-run cost function (as opposed to a long-run cost function where all inputs to production, including capital, can vary) is because centers make decisions about production and expenditures in the short-run when the physical facilities housing the center are fixed. As a result, child care centers cannot adjust their use of capital to changes in market conditions. For example, a reduction of rents in a building three blocks away will not result in the child care center moving to that location overnight, even though not doing so means incurring higher expenses.

Because capital is fixed, its price does not affect short-run decisions about how much to produce. However, in the model described below, the amount of capital, square footage, is included. This is because different centers operate with different amounts of physical space. Therefore, total variable costs may differ from center to center, depending on the amount of physical capital employed. The level of center process quality also affects costs and is included as a determinant of costs under the assumption that the higher the quality of services, the higher the costs of production.

The cost function hypothesizes that the operating costs would go up as the prices of variable inputs (e.g., the wage rate, which is the price of labor) go up, keeping capital and the output constant. Similarly, it shows that an increase in output generates an increase in total variable cost, holding capital and the prices of variable inputs constant. Also, it shows that costs go up if quality increases, holding prices of inputs and quantity of output constant.

It should be emphasized that in order to derive the cost function from the production function, it is necessary to assume that the firm is minimizing costs. This is another way of saying that the firm aims to produce goods or services at the lowest costs, given the prices prevailing in the market. This has an important implication. If input prices change, insofar as is technically feasible, the firm normally will change the proportions of inputs used in production to produce at the lowest cost. This is true regardless of the basic objective of the firm. For instance, in ECE, centers may have different basic purposes for providing services. A for-profit center has to try to maximize its profits. A nonprofit center may try to maximize its enrollment or its quality of services. These objectives, especially the objectives of the nonprofit centers, are not known by the researcher. However, no matter what the main purpose of the operation, as long as the center is not wasting resources, the framework described above is valid. The assumption of cost minimization is logical for any firm, and is particularly reasonable for both nonprofit and for-profit centers in the ECE market. The highly competitive nature of the market should put pressure on centers to avoid wasteful use of resources.

It should also be noted that while the production function and the cost function are counterparts to each other (dual in theory), estimates of the stochastic forms need not be dual to each other. With a cost function one needs only to assume that firms are minimizing costs, while estimation of a production function requires the underlying, more stringent assumption of profit maximization (Hamermesh & Grant 1979)

These ideas can be formalized using the following equation:

(1) $C=f(P,Y,K,q,D)$,

where

C = Total Variable Cost of the center. C includes the wage bill, nonwage benefits, food and material expenses, staff education costs and donations.

P, Y, K, q, and D are determinants of C.

P = the vector of input prices, for instance, the wage rates paid to different types of labor.

Y = the vector of different outputs produced. For instance, the hours of infant-toddler services, or the hours of preschool services produced.

K = the amount of physical capital (square footage), which is fixed in the short-run for each center.

q = the index of center quality.

D = the vector of variables that captures various other center characteristics

As noted above, different firms may produce different levels of output at the same level of quality, even if they employ the same amount of inputs. This is possible if the centers differ with respect to intangible center characteristics, such as managerial efficiency, or worker attitudes. Centers that are observably identical in every respect (including quality) may have different costs in the presence of different, unobservable center characteristics. Because of these concerns, in equation (1), D stands for the variables that capture the efficiency differential due to the structure in which the center operates. Some examples are the profit status of the center, and the state in which the center operates. A detailed description of these variables is presented in the data section below.

The Cost Function and the Project Conceptual Structure

The analytical framework for the cost function is embedded in the project conceptual structure depicted in Figure 2.1. In the figure, center costs are shown as determined by Center Structure, which includes the center FTE (Y in the equation) and other characteristics such as profit status and location (D in the equation).

Finally, it is affected by Process Quality (*q*), Capital facilities (*K*), and the Labor Market (*P*).

Figure 2.1 also shows how quality is produced. According to the diagram, structural classroom and center characteristics, as well as the children themselves, directly affect the level of process quality. Classroom Process Quality is influenced by classroom structures such as teacher education, teacher experience, and the number of children per teacher. It is also affected by center structural characteristics such as the number of children served, the age groups that are served, and the profit status of the center. In addition, the arrows from family to children and from children to process quality indicate that the process quality embodies a component that is generated by the family -- or the home environment.

As is the case with the production of child hours, the production of process quality also involves technology, which can partially be captured by some observable center characteristics. For example, differences in center curricula, variations in center director's education and experience or managerial ability are factors that produce efficiency differences in process quality.

Like any other production mechanism, an increase in the process quality produced by the center can be achieved by increasing the inputs that are employed in the process. For example, increases in average teacher education, experience, and staff-child ratio are expected to increase the level of process quality produced by the center. If the center is operating efficiently (not wasting resources) the increases in inputs that enter the production of process quality must necessarily be associated with increased costs. For example, to increase the average teacher education and experience at the center, the center must incur higher wage and salary expenditures. Similarly, to increase the staff-child ratio the center must hire more workers for a given number of children. It is costly to increase the process quality of the center (or to produce more quality), and the inclusion of the quality index (*q*) in the right-hand-side of the cost function depicted in equation (1) controls for the differences in costs the centers incur that are associated with the production of quality.

SPECIFICATION OF THE COST FUNCTION

To estimate the cost function in equation (1), a particular functional form needs to be chosen. The analysis reported below employs a translog functional form. Translog cost functions have enjoyed widespread applications which include estimation of hospital cost functions (Vita 1990), cost of producing public safety (Gyimah-Brempong 1987), cost functions for the trucking industry (Gagne 1990), and cost functions pertaining to electricity and gas production (Betancourt and Edwards 1987). A translog function is a second-order Taylor series approximation to an unknown, underlying, twice-differentiable function (Christensen, Jorgensen, and Lau, 1973).

The empirical counterpart of equation (1) is the following translog cost function:

$$
\begin{aligned}
(2)\quad \ln C = {} & \alpha_0 + \Sigma\alpha_i(\ln P_i) + \beta_1(\ln K) + (\beta_2/2)(\ln K)^2 \\
& + (1/2)\Sigma\Sigma\gamma_{ij}(\ln P_i \ln P_j) + \Sigma\delta_i(\ln P_i \ln K) \\
& + \Sigma\pi_k(\ln Y_k) + (1/2)\Sigma\Sigma\xi_{kr}(\ln Y_k \ln Y_r) \\
& + \Sigma\Sigma\mu_{ik}(\ln P_i \ln Y_k) + \Sigma\phi_k(\ln Y_k \ln K) \\
& + \tau_1(\ln q) + (\tau_2/2)(\ln q)^2 + \tau_3(\ln K \ln q) \\
& + \Sigma\psi_k(\ln Y_k \ln q) + \Sigma\Omega_i(\ln P_i \ln q) + \Sigma\omega_n D_n \\
& + u_i
\end{aligned}
$$

where

C = total variable cost, as defined earlier.

P_i and P_j = the market prices of the *i*th and *j*th inputs, respectively. In this study three input prices are used: the wages for teaching staff with less than 12 years of formal education, wages for staff with 12-15 years of education, and wages for staff with 16 and more years of education.

Y_r and Y_k = the amounts of the *r*th and *k*th output. In this study a center produces three kinds of output: hours of infant-toddler services, hours of preschool services, and hours of before- and after-school services for school-aged children.

K = the amount of capital which is assumed to be fixed in the short-run.

q = the process quality of the center.

D = a vector of dummy variables representing center attributes. They are defined in the data section below in detail. The use of a dummy variable is an appropriate way to capture differentials if there is good reason to believe they are scalar, that is, that the characteristic simply increases or decreases costs in all centers by a certain amount or percentage.

ln stands for the natural logarithm, and u is the error term, that captures all the unobservable factors that influence total variable cost.

The coefficients, denoted by Greek symbols, demonstrate the link between the natural logarithm of total variable cost, which is the dependent variable, and its determinants, presented on the right hand-side of the equality sign. Their signs and magnitudes are determined by estimating (fitting) the model depicted in equation (2) to the data collected from ECE centers in this study. For example, the value of τ_1 obtained through the analysis of the data (the estimated value of τ_1) will display how much total variable cost would change (in percentage terms) as center quality (q) changes by a given percentage.

A few comments on the function depicted in equation (2) are in order. First, this specific form is dictated by economic theory. As described earlier, short-run cost-minimization behavior of the centers generates a cost function, where the prices of the variable inputs (e.g. the market wage rates), the amount of the physical capital (square footage) and the outputs produced (child hours) enter the cost function because they are the inputs and the outputs of the production process. After taking the natural logarithms, these variables (lnP for the natural log for the price of variable inputs, lnK for capital and lnY for outputs) not only enter as linear terms (such as $\ln P_i$ or lnK), but they also enter as quadratic (squared) terms [e.g. $(\ln K)^2$]. Furthermore, there are interaction terms between these variables. For example, the last term of the second line of equation (2) is $\Sigma\delta_i(\ln P_i \ln K)$. With three input prices P_1, P_2 and P_3, this term can be stated as $\delta_1 \ln P_1 \ln K + \delta_2 \ln P_2 \ln K + \delta_3 \ln P_3 \ln K$, which demonstrates that there are three additional variables in the model, that are created by multiplying $\ln P_1$ by lnK, $\ln P_2$ by lnK, and $\ln P_3$ by lnK. To give another example, the last term in the fourth line of equation (2) [$\Sigma\phi_k(\ln Y_k \ln K)$] represents the interaction variables between lnY, and lnK (which are themselves the original variables). More precisely, $\Sigma\phi_k(\ln Y_k \ln K)$ can be spelled out as $\phi_1(\ln Y_1 \ln K) + \phi_2(\ln Y_2 \ln K) + \phi_3(\ln Y_3 \ln K)$, which demonstrates that if there are three categories of children served (Y_1, Y_2, and Y_3), there will be three interaction terms between the output variables and the capital (K) in the model.

The index of quality (q) is entered as an output variable into the model. Thus, equation (2) includes interaction terms between quality (q) and other variables. In an alternative specification, quality was treated as a control variable, which involved including only q and q^2.

The translog functional form is used to estimate the cost function because it is a flexible form which does not place restrictions on the interaction of parameters. That is, within the translog specification, the data determine the structural form of the functional relation. Estimation of the translog function allows the researcher to test all combinations of possible substitutions among inputs rather than making a priori assumptions.

To be consistent with economic theory, the cost function should be linearly homogenous in input prices, and the cross-coefficients must be symmetric. These imply the following restrictions on Equation (2).

$\Sigma\alpha_i = 1$, $\Sigma_j\gamma_{ij} = 0$ for all i, $\Sigma\delta_i = 0$, $\Sigma\Omega_i = 0$, and $\Sigma_i\mu_{ik} = 0$ for all k;

$\gamma_{ij} = \gamma_{ji}$ for all i and j, and

$\xi_{kr} = \xi_{rk}$ for all k and r.

Using Shephard's Lemma, optimal demand for the *i*th input is obtained by differentiating the cost function with respect to the price of the *i*th input (P_i) which yields:

$$(3)\quad \partial \ln C/\partial \ln P_i = (\partial C/\partial P_i)(P_i/C) = P_i X_i/C,$$

where X_i is the optimal level of input *i*. Thus, $P_i X_i/C$ is the share of the input *i* in total variable cost. Letting S_i denote the cost share of input *i*, and differentiating the cost function depicted in (2) with respect to P_i yields the following structure for the cost shares:

$$(4)\quad S_i = \alpha_i + \Sigma\gamma_{ij}\ln P_j + \Sigma\delta_i \ln K + \Sigma\mu_{ik}\ln Y_k + \Omega_i \ln q.$$

The cost equation is estimated jointly with the system of share equations depicted in (4). To avoid singularity in the error covariance matrix, one of the share equations is deleted and the model is estimated using non-linear methods subject to the restrictions imposed above.

In principle, one can choose to estimate either a production function or a cost function. In practice, however, the production function imposes the additional constraint of profit maximization over and above the constraints necessary for a cost function. Two other factors in this study contribute to the choice to estimate a cost function. First, the study team was more interested in the relationship between cost and quality than between the use of inputs and production. Second, in our context estimation of a cost function has stronger statistical power. This is because the cost function assumes that prices of inputs are exogenous to the firm's decisions, while the production function assumes that the quantity of inputs is exogenous. Given that our unit of observation is the firm, it is more reasonable to assume the exogeneity of wages rather than the exogeneity of quantity of labor hired.

In sum, the basic framework used in this study consists of three measures of output (i.e. $k, r = 1,2,3$), price of three different categories of inputs ($i, j = 1,2,3$), and five center characteristics ($n = 1,\ldots,5$).

THE DATA

THE DEPENDENT VARIABLE, TOTAL VARIABLE COST (C)

C, the dependent variable, is total variable cost of the center during the fiscal year 1991-92. It is the sum of the following annual center costs: wage and salary expenditures, nonwage benefits, staff education costs, subcontracting costs, food costs, other operating expenses, and the estimated value of in kind donations (food, volunteer services, and supplies). The overhead costs, facilities cost, and insurance costs are not included, because they constitute fixed costs, costs that do not change in the short-run with respect to the level of service provided.

The value of donations is included to make the total variable costs of different centers comparable to each other. The value of volunteer services is calculated by multiplying the volunteer hours by the wage rate of the paid labor doing similar work. For example, consider two centers that operate in the same labor market, thereby facing the same wage rates. Assume further that they serve the same type of children and produce the same number of child-hours. In addition, they use the same amount of space and have the same level of process quality. Suppose both centers use the same amount of milk per year, but the first center buys its milk, whereas the local dairy donates the second center's milk. Given that the second center does not buy its milk, its operating expenses, which is the left-hand-side of equation (2) will be less than that of the first center by the amount of the first center's milk costs. This, of course, would create a distorted image, as if the second center were more efficient than the first one, while in effect, the only difference between the two centers is the fact that the first one must pay to obtain milk, but in the case of the second center, a third party is spending the same amount of resources on its behalf. From the point of view of the society, however, both centers use the same amount of resources to produce the same output, regardless of the avenues through which these resources are obtained. Thus, their efficiencies are identical.

To take another example, imagine a private foundation which donates annually half a million dollars to a particular center that serves an inner city neighborhood. Assume that the center provides excellent care, and the money granted by the foundation covers all expenses of the center (operating, as well as fixed). Therefore, the center provides its services free of charge. Imagine a different center in the same neighborhood that is producing the same quantity of output (same number of child-hours) for a total of $250,000 per year, but it has a lower level of quality than the first center. Furthermore, suppose that this center does not receive any donations, and it is charging a fee of $75 per week for full-time child care. Although from the consumers' point of view the first center is more "efficient", because it provides better care free of charge, it may not be efficient from the point of view of the society in general. If the second center can increase its quality to the level of the first center by spending an additional $150,000 a year (e.g. through hires of additional teachers), this indicates that $100,000 are being wasted by the first center every year. This is the case regardless of who pays for care and how much, because the simple economic fact is that, if used efficiently, the original half a million dollars from the private foundation could have generated the same quantity and quality of output, and there would be room to use the remaining $100,000 to increase the quality and/or quantity somewhere else. Hence, *efficiency* relates to the allocation of resources in the best possible way, such that the limited resources produce the maximum quality and quantity.

To the extent that the centers can alter the hours of work provided by the center's director(s), the salaries of the directors are also part of the total variable costs. In this study we did make this assumption for some specifications of the model. Some for-profit centers are owned and operated by individuals who are also the directors of the center. For those owner-directors who did not report a wage or salary, the salaries are imputed and added to the total variable costs. Missing salaries of owner-directors are imputed in three different ways. i) They were assigned the average salary of administrative directors in the same state, same sector (profit or non-profit) and similar center size, ii) by multiplying the highest wage at the center with the hours worked by the owner-director, iii) by multiplying their hours by the highest wage at the center plus 23 percent, which is the mean premium a director receives above the highest wage of the center. The results were insensitive to the method.

INDEPENDENT VARIABLES

The following variables are included in the main model of the total variable cost function as determinants of total variable cost:

Market wage for less educated staff (WAGE1) = the weighted average wage rate of the teaching staff at the center, with 12 years or less education, weighted by teacher hours, in the spring of 1993. For centers which did not have any staff in this category, the mean wage for the state was used.

Market wage for staff with 13-15 years of education (WAGE2) = the weighted average wage rate of staff with 13-15 years of education at the center in the spring of 1993. For centers which did not have any staff in this category, the mean wage for the state was used.

Market wage for highly educated staff (WAGE3) = the weighted average for staff with 16 years or more of education. For centers which did not have any staff in this category, the mean wage for the state was used.

The input prices used in this equation are proxies for the market wage that has to be met by a center in order to hire the given type of staff person. Every center, regardless of whether or not it hires a specific kind of staff person, has the option to do so. Economic theory assumes that the decision about who to hire is based on the market wages for that type of personnel. Because actual market wages were not available, they were estimated as either the weighted average of wages paid for the occupation in the center, or for centers not hiring the type of worker, the state mean.

Infant/toddler output (INFANT-TODDLER) = the total annual hours of service the center provided for infant-toddlers in fiscal year.

Preschool output (PRESCHOOL) = the annual hours of service provided for preschoolers.

School-aged output (SCHOOLAGE) = the annual hours of care provided for kindergarten-school age children.

Process quality index (QUALITY) = the quality index for the center which is a weighted average of room-level process quality indices (See Chapter 6 for a description of the construction of the index).

Square footage (SPACE) is the square footage of the inside space used by children, which is the measure of physical capital (K).

Profit status (PROF) = 1 if the center is for-profit, and 0 if it is nonprofit. This and the variables explained below constitute the vector D in equation (2).

Part of a national system (NATIONAL CHAIN) = 1 if the center is part of a national for-profit system and 0 if not.

Specially funded centers (SPECREG) = 1 if the center receives public money, either from the state or federal government and that funding is tied to higher standards than required by state licensing regulations. This group includes Head Start centers, centers where 20 percent or more of their enrollment constitute special needs children, and special preschool programs sponsored by State or Federal Department of Education.

Public Centers (PUBAUSP) = 1 if the center is owned and operated by a public agency.

Publicly Subsidized (PUBSUPP) = 1 if the center is not publicly owned or operated, but receives more that 50 percent of its revenue from public grants and/or public fees and/or USDA reimbursement.

Also included are dummy variables for states to capture impact of state-specific unobservables on costs.

EMPIRICAL RESULTS

PROCEDURES

The cost function is estimated using the whole sample. Two North Carolina special education centers were dropped from the sample, because of their unusual cost and quality structures, leaving 396 observations. The explanatory variables are normalized by dividing each variable by its mean before taking the natural logs. Not all centers in the sample serve all three age groups. When a given center does not serve a particular age group, the annual hours of service provided for that particular age group is, of course, zero. It is assumed that this is a calculated decision on the part of the center. In other words, it is assumed that there are no outside constraints imposed on the center which prevent it from providing that particular service, but rather, it is the center's choice based on comparing the associated costs and benefits. The center observes the wage rates prevailing in the market, the fees charged by potential competitors, and the regulatory environment, such as the adult-child ratios imposed by the state.

The inclusion of the centers that do not serve all three age groups is problematic, because the variable is zero if the center does not provide the service, and the natural logarithm (ln) of zero is undefined. One solution is to insert arbitrary small values for zero (e.g. 0.0001). However, previous research employing the translog cost function has demonstrated that the results may be sensitive to the choice of the value to be substituted for zero (e.g. 0.001 vs. 0.0001) (Vita 1990). A more robust method, and the standard transformation employed in estimating cost functions is to apply the Box-Cox transformation, where $\ln Y_i$ is replaced with $(Y_i^{\lambda}-1)/\lambda$, and the Box-Cox parameter λ is estimated jointly with other coefficients of the system. (Caves et al. 1980, Vita 1990).

RESULTS

Effects of Quantity Produced

The results which are reported in Table 12.1 demonstrate that the first-order parameters (π_1, π_2, π_3, α_1, α_2, α_3) are positive and significant as suggested by theory, indicating that increases in production levels and the wage rates bring about increases in total variable cost.

Since the explanatory variables are mean scaled, the coefficients of first-order parameters are elasticities at the means. *Elasticities* measure the ratio of the percentage change in the dependent variable to the percentage change in the independent variable. They provide a measure of the responsiveness of the dependent variable to changes in the independent variable. In this case the elasticities measure the percentage change in cost divided by the percentage change in either input prices or output. For example, Table 12.1 reveals that the coefficient of infant-toddler hours (π_1) is 0.263 This means that a 10% increase in the hours of infant-toddlers served at an average center brings about 2.6% increase in total variable costs. Similarly, a 10% increase in the hours of service provided to preschoolers generates a 3.0% increase in the total variable costs.

The Effect of Quality Differences on Cost

Table 12.1 shows a positive relation between total variable cost and quality. The first-order parameter of the quality index (τ_1) is positive and significant, which indicates, as expected, that an increase in quality is associated with an increase in total variable costs. The coefficient indicates that if the quality index increases by 10%, this brings a 4.0% increase in total variable costs. The mean value of the quality index of the centers scaled to the ECERS instrument is 4.0, with a standard deviation of 0.85. This means that the average center in our sample must increase its quality by 25 percent to achieve good quality. Using the estimated coefficient of the quality index (τ_1), a 25% increase in quality implies a 10 percent increase in total variable costs for the average center. The average total variable costs for centers is $224,899. This implies that an increase the quality level of an average center to the level considered *good* by education experts would be associated with an additional cost of $22,490 per year. Given that the average center provides a total of 137,017 hours of service to infant-toddlers, preschoolers and kinder garden-school age children in a year, it would cost an additional 16 cents per hour per child to produce good quality for an average center, keeping constant the space, the hours of service provided, and the wages paid to staff.

The interaction terms between QUALITY and WAGE1 and between QUALITY and WAGE3 are statistically significant, with negative and positive coefficients, respectively. This indicates that, for the least educated workers a 10 percent increase in the wages with respect to their sample average brings about a 2.22 percent increase in total variable cost for a center which has average quality and pays the average wages to other types of workers. If the same center has good quality (which is 25% more than the average quality in the sample), the same 10% increase in wages of the least educated workers is associated with 2.16 percent increase in total variable costs. This demonstrates that an increment in wages to the least educated workers generates smaller additions to costs at good quality centers than at average quality centers, which in turn implies that low educated workers become relatively more productive following a wage increase if they are affiliated with a good quality center in comparison to an average quality center.

The opposite is true for workers with 16+ years of education. An increase in wages for these workers is associated with larger increments to costs if center quality is above average.

These results suggest that wage increases for the least educated workers are relatively more productive in high quality centers, and wage increases for highly educated workers are more productive in low quality centers.

The model shows that centers can increase their quality by hiring more staff and/or by changing the composition of staff in favor of highly educated workers. Either action would increase center quality and increase center costs, the wage rates being constant. This is because a substitution of more educated workers for less educated ones and hiring more workers would increase the wage bill, even if the wage rates remain intact.

The results indicate that the increase in costs due to an increase in quality is not high. This is true in the presence of the wage-quality interaction as depicted by equation (2). If a mandate forced centers to increase their staff-child ratios, thereby increasing the demand for workers, wages would not increase significantly as a result. Supporting evidence for this statement can be found in Blau (1993) who reports that the elasticity of child care labor supply is approximately 2.0. Labor supply elasticity measures the percentage response in the amount labor supplied to the market following a one percent increase in the wage rate. Blau indicates that this relatively large value could help explain the tendency for child care workers' wages to remain unchanged in relative terms despite rapid growth in the demand for child care (Blau 1993, p. 344). In our data we also find support for the hypothesis that centers do not operate in a tight labor market. Over 80% of center directors indicated that they did not offer higher wages to newly hired workers. Furthermore, 50% of the center directors reported increasing wages by less than 3% in the last year and only 12% reported raising them by more than 6%.

If wages are raised exogenously, this would have a direct impact on center costs, but increased wages would not have any appreciable impact on the *change* in costs associated with *increased* quality.

Alternative functional forms

It should be noted that Equation (2) treats both quantity and quality as two attributes of output that are determined jointly. Thus, the model gives the centers the flexibility of increasing or decreasing the level of quality as a response to variation in prices (such as wages). The cost function can include only lnq and $\ln q^2$, if one assumes that center quality is determined exogenously. To investigate the results under this specification, quality is entered without the interaction terms. It is found that an increase of quality from average to good would cost an additional 13 cents per hour per child. Alternatively, a more flexible method of controlling for quality in this framework is to include a series of dummy variables. Inclusion of four dummy variables for quality intervals 0-2.5, 2.5-3.5, 4.5-5.5 and 5.5 and above (3.5-4.5 being the control group) revealed that centers that operate at the quality range of 4.5-5.5 have costs that are 7.5 percent higher than the ones that operate in the quality range of 3.5-4.5, which is associated with an additional 12 cents per child per hour.

Therefore these three alternative specifications generate a range of 12-16 cents per child per hour as the cost of increasing center quality from average to good.

The Effect of Center Attributes

The coefficient of the profit dummy (ω_1) is not significantly different from zero; neither is the coefficient of the dummy for national chains. The sum of the PROFIT and NATIONAL CHAIN coefficients is not significantly different from zero either. This implies that there are no efficiency differences between for-profit and nonprofit centers. On the other hand, the coefficient of SPECREG (ω_3) is 0.18, and significantly different from zero. This indicates that centers that receive public money, either from the state or federal government, that is tied to higher standards have variable costs that are 19 percent higher than their non-publicly owned or operated, or publicly supported nonprofit counterparts.[1] The model is also estimated by including the profit dummy only (i.e without NATIONAL

CHAIN, PUBSUPP, PUBAUSP and SPECREG). The profit dummy was not significantly different from zero.

The model reported in Table 12.1 is re-estimated by including interaction terms between PROFIT and state dummies. The results remained intact, which indicate that privately owned for-profit centers and for-profit centers that are part of a national chain are not distinguishable from non-publicly owned or supported nonprofit centers. There is no evidence of efficiency differences across various types of providers within a given state either. However, SPECREG was robustly significant in all specifications, possibly reflecting expended and costly services in these centers.

Comparison with Previous Research

Previous research on efficiency differences between for-profit and nonprofit centers lacked a proxy for center quality. As a result, researchers included the ratio of teaching staff to FTE children into cost equations as a control for quality (Powell & Cosgrove 1992, Mukerjee & Witte 1993, Preston 1993). This is problematic because the cost function already controls for the number of children served. Thus, including the ratio of teaching staff to children is analogous to adding the labor input (teaching staff) as an explanatory variable to the cost function. However, by the nature of the cost function, the amount of labor used is an endogenous variable, and should not be included as an independent variable into the cost function. Furthermore, even though the staff-child ratio is a determinant of center process quality, it captures only one dimension of center quality. In fact there is evidence indicating that various structural quality indicators (e.g. staff-child ratio, group size, average education, experience and tenure of staff, etc.) explain only half of the variation in center process quality, and unobservable center characteristics are responsible for the remainder of the variation in quality across centers (Blau 1994; Chapter 13 of this report). This implies that staff-child ratio, included as a proxy for quality, is measured with error. This may yield biased parameter estimates if the component of the process quality not explained by staff-child ratio is correlated with the right-hand side variables of the cost equation.

To investigate the sensitivity of the results to this measurement error and specification problem, a cost equation similar to the ones employed by previous studies is estimated (Powell and Cosgrove 1992), including the staff-child ratio, group size, center staff turnover, average education, experience and tenure of staff members, the percent children who are infants and age of the center are included as proxies for center quality. The results are reported in Table 12.2. Although the main results remain the same, the coefficient of the profit dummy becomes negative and significant in agreement with previous research. According to Table 12.2, for-profit centers have 10% lower costs with respect to nonprofits, all else being the same. This result underscores the importance of controlling center quality carefully. Due to the unavailability of data, previous work relied on imprecise proxies of center quality, which apparently resulted in biased estimates and inaccurate representation of production technology.

Volunteers and Directors as a Fixed Input

The cost functions were also estimated using the volunteer hours as a fixed instead of a variable input. This involved subtracting the variable in kind volunteer donations from total variable cost on the left-hand side of the equation and then including volunteer hours on the right-hand side. This can be justified if centers, in their long-range planning, can accurately forecast the number of volunteers hours to be received, and if they plan their operation by taking into account this factor. Using volunteer hours as a fixed input of production involves additional cross terms between volunteer hours, wages and outputs. The results (not reported in the interest of space) were very similar to the ones reported in Table 12.1. Similarly, treating directors as a fixed input, and subtracting their salaries from the total variable cost did not alter the results.

Economies of Scope

Economies of scope exists if there are complementarities between groups of outputs, and hence it is cheaper to produce them jointly than separately. Assume there are two categories of output: infant-toddlers, and older children. Following Gyimah-Brempong (1987), Murray & White (1983), Denny & Pinto (1978), economies of scope exist, if

$$(5) \quad C(Y_1,Y_2)<\{C(Y_1,0)+C(0,Y_2)\},$$

where: Y_1 stands for the hours of service provided for infant-toddlers, and Y_2 is the hours of older children served.

If the condition in (5) holds, the cost of serving infant-toddlers and older children jointly is less than the sum of the costs of serving them separately.

In the long-run, a sufficient condition for the existence of scope economies between two outputs *i* and *j* is

$$(6) \quad C^{LR}{}_{ij} = \partial^2 C^{LR}/\partial Y_i \partial Y_j < 0 \quad i \neq j \text{ for all } Y,$$

where: C^{LR} is the long-run cost function.

Equation (6) indicates that for long-run economies of scope to exist between outputs Y_i and Y_j, an increase in Y_j should decrease long-run marginal cost of Y_i. Note that

$$(7) \quad C^{LR}{}_{ij}=\partial^2 C^{LR}/\partial Y_i \partial Y_j = C^{SR}{}_{ij}+C^{SR}{}_{iK}(\partial K^*/\partial Y_j)$$

where: $C^{SR}{}_{iK}=\partial^2 C^{SR}/\partial Y_i \partial K$, C^{SR} stands for the short-run cost function, and K^* is the long-run equilibrium value of K.

If K is normal, $\partial K^*/\partial Y_j > 0$, and a sufficient condition for long-run scope economies is $C^{SR}{}_{iK}<0$ and $C^{SR}{}_{ij}<0$.

In our context, if $\pi_k\pi_r+\xi_{kr}<0$ this implies that $C^{SR}{}_{ij}<0$ (Vita 1990, Gyimah-Brempong 1987, Murray & White 1983). The presence of scope economies is tested among infant-toddlers, preschoolers and kindergarten-school aged children by calculating $\pi_k\pi_r+\xi_{kr}$ for three possible combinations. Estimated $\pi_1\pi_2+\xi_{12}$ was 0.04174 with a standard error of 0.206[2] This means that the 90% confidence interval is (0.008, 0.076), indicating no economies of scope between infant-toddlers and preschoolers. The 90% confidence interval for $\pi_1\pi_3+\xi_{13}$ is (0.011, 0.036), which does not give support to the hypothesis of scope economies between infant-toddlers and school aged children. Similarly, the confidence interval for scope economies between preschooler and school aged children is (-0.028, 0.020), and does not enable us to reject the hypothesis of no economies of scope. These results indicate that in all cases we failed to reject the hypothesis of no economies of scope. Thus, there is no evidence indicating that serving various age groups jointly is more efficient than serving them separately.

Economies of Scale

Scale economies (SCE) measures short-run economies of scale. It is defined as the proportional increase in total variable costs due to a proportional increase in all outputs when fixed inputs do not change. It is given by

$$(8) \qquad SCE = 1/\Sigma(\partial \ln C/\partial \ln Y).$$

For our multi-product translog cost function depicted in (2) Scale Economies (SCE) is defined as

$$(8A) \quad SCE=1/\{\Sigma_k\pi_k+\Sigma_k\Sigma_r\xi_{kr}Y_r+\Sigma_k\Sigma_i\mu_{ki}\ln P_i +\Sigma_k\phi_k\ln K+\Sigma_k\psi_k\ln q\}.$$

When SCE > 1, there are scale economies (i.e. increasing returns to scale). That is, a proportional increase in the hours of infant-toddlers, preschoolers and school aged children brings about a proportionately smaller increase in total variable cost. When SCE < 1, there are decreasing returns to scale, because an increase in the number of children served generates a proportionately larger increase in costs.

When mean-scaled data are used, the last four terms in the denominator of equation (8A) are equal to zero. Therefore the measure of scale economies reduces to $SCE=1/\Sigma_k\pi_k$. According to the estimated coefficients reported in Table 12.1, the calculated measure of scale economies is 1.5. Since it is a function of the estimated parameters, one can calculate its variance, and construct a confidence interval. The 90 % confidence interval for SCE was 1.35-1.69. This means that a 10 percent increase in the hours of service provided by an average center brings about an increase in the total variable costs by 6 to 7.4 percent.

It should be noted that the second order (squared) parameters for output variables (ξ_{11}, ξ_{22}, ξ_{33}) reported in Table 12.1 are always positive. This implies that as the output levels go beyond the average values, the output elasticities will tend to increase, thus the SCE will decrease. Put differently, the economies of scale will not continue indefinitely. This means that there are U-shaped short-run average cost curves: costs drop as output increases up to an optimum level, then they increase for higher levels of output.

Long-run Scale Economies

As Vita (1990) outlines, the parameters of the estimated variable cost function and the price of the fixed input (physical capital) can be used to apply the envelope condition to solve for the optimal levels of the fixed input, which provide the basis for calculation of long-run scale economies. In the absence of the price of the fixed factor, long run scale economies (LSCE) can be calculated as

(9) $LSCE = (1-\partial \ln C/\partial \ln K)/\Sigma(\partial \ln C/\partial \ln Y)$.

The long-run scale economies obtained from Table 12.1 is 1.22 [(1-0.205) / (0.26+0.30+0.09)]. Calculating the 90% confidence interval reveals that a 10% increase in total hours of operation is associated with 8.2 to 8.5% in total variable costs for an average center in the long-run.

Labor-labor Substitution and Wage Elasticities of Labor Demand

The Allen Elasticity of Substitution, σ_{ij} $i \neq j$, measures the effect on relative factor inputs of a change in the relative factor prices, holding constant output and other factor prices. Two factors are called *p-complements (p-substitutes)*, if $\sigma_{ij}<0$ (>0). *P-complementarity (p-substitubility)* implies that the factors are complements (substitutes) in production, and an exogenous increase in the price of one factor brings about a decrease (an increase) in the use of the other one. For our translog cost function, $\sigma_{ij}=(\gamma_{ij}/\alpha_i\alpha_j)+1$ $i \neq j$.

The results presented in the first panel of Table 12.3 indicate that centers can very easily substitute workers with 13-15 years of education for workers with 16 and more years of education. On the other hand, workers with less than 12 years of education and the ones with 16+ years of education are complements in production. Similarly workers with less than 12 years of education and the ones with 12-15 years of education are also complements. These results demonstrate that centers use low educated workers in conjunction with other workers.

The second panel of Table 12.3 reports the estimated constant-output (short-run) *labor demand elasticity* (η) for three labor categories. It is defined as the percentage change in the use of an input as a response to a percentage change in its price; i.e $\eta_i=\partial \ln X_i/\partial \ln P_i$, where X_i is the quantity of factor *i* employed, and P_i is its price. It can be shown that $\eta_i=(\gamma_{ii}+\alpha_i^2-\alpha_i)/\alpha_i$, where α_i is the estimated share of the *i*th input in total variable cost. The estimated own price elasticity for workers with less than 12 years of education is positive, which is contradictory to economic theory. This result, however, is due to the large second order coefficient γ_{11}. The variance of the elasticity is calculated, which is then used to test the hypothesis that the elasticity is equal to zero. The calculated t-statistic under the null hypothesis that the labor demand elasticity for workers with education less than 12 years was 0.53. Thus, we could not reject the hypothesis that labor demand for these workers is perfectly inelastic in the short-run. This means that in the short-run the centers would not reduce their demand for these workers in the face of a wage increase. This is intuitive because given that the level of operation is constant in the short-run, centers do not have any flexibility in terms of reducing the labor usage, because of the ratio requirements. For a given number of children, centers have to employ a minimum number of adults (teachers and aides) dictated by state regulations. Thus, small increases in the wages paid to low educated workers cannot generate a reduction in center's demand for these workers as long as the increase in the wage rate is not large enough to exceed the level paid to those workers with higher education.

The demand elasticity for workers with 13-15 years of education is -.44, and the one for worker with 16+ years of education is -0.33. These results demonstrate that centers do not have much flexibility in the short-run to adjust their labor usage in the presence of wage increases.

CONCLUSION

- Estimation of short-run cost functions did not reveal any statistically significant differences between general categories of for-profit and nonprofit centers. Furthermore, various types of nonprofit (publicly supported, publicly operated, etc.) are not distinguishable from their for-profit counterparts (whether they are independently owned and operated or part of a national chain). Nonprofit centers that receive public money, either from the state or federal government, which is tied to higher standards, have total variable costs that are 19 percent higher than other centers, keeping quality of services constant. This result indicates that, with the exception of a segment of the nonprofit sector, that faces higher regulations tied to federal or state money, there are no efficiency differences between for-profit and nonprofit sectors in terms of producing child care services.

  There is evidence of economies of scale in production, which means that an expansion in the hours served lowers average costs. A 10 percent increase in the hours of service brings about only an 8 percent increase in costs, keeping center quality constant. On the other hand, there is no evidence of economies of scope. Serving various age groups together is no more cost efficient than serving them separately.

- Centers easily substitute staff with 16 and more years of education for staff with 12-15 years of education. However, both groups are employed as complements to the staff with the least education (less than 12 years).

- Centers have inelastic demand for labor services. In the short-run, where the hours of child care services is constant, increases in wages do not bring about significant reductions in employment.

- Wages and center quality do not interact significantly. However, wage increases for the least educated workers are more cost efficient in high quality centers, and wage increases for highly educated workers are more cost efficient in low quality centers.

- It is not expensive to increase the quality of a typical child care center. It costs between 12-16 cents per child per hour to increase the quality from average to good.

Endnotes

1. Note that the percentage impact of SPECREG on total variable cost is $\exp\{\omega_2 - \frac{1}{2}\mathrm{Var}(\omega_2)\} - 1$, where $\mathrm{Var}(\omega_2)$ is the variance of ω_2 (Kennedy 1981).

2. The variance of $\pi_1\pi_2+\xi_{12}$ is equal to $\pi_2^2\mathrm{Var}(\pi_1)+\pi_1^2\mathrm{Var}(\pi_2)+\mathrm{Var}(\xi_{12})+2\pi_1\pi_2\mathrm{Cov}(\pi_1\pi_2)+2\pi_2\mathrm{Cov}(\pi_1\xi_{12})+2\pi_1\mathrm{Cov}(\pi_2\xi_{12})$.

Chapter 12 Appendix

Tables

Table 12.1	Cost Function Regression
Table 12.2	Cost Function with Structural Quality
Table 12.3	Substitution and Labor Demand Elasticities

Table 12.1
Cost Function Regression

VARIABLE NAME	PARAMETER	COEFFICIENT	STD. ERROR	t - STATISTIC	SIGNIF. LEVEL
Constant	α_0	12.486	0.049	256.628	0.000
Wage1	α_1	0.221	0.013	17.190	0.000
Wage2	α_2	0.371	0.016	22.700	0.000
Wage3	α_3	0.221	0.014	15.940	0.000
Infant-toddler	π_1	0.263	0.029	8.981	0.000
Preschool	π_2	0.298	0.042	7.045	0.000
Schoolage	π_3	0.095	0.023	4.188	2.813e-05
Infant * Preschool	ξ_{12}	-0.037	0.013	-2.849	0.004
Infant * Schoolage	ξ_{13}	-0.002	0.003	-0.956	0.339
Preschool * Schoolage	ξ_{23}	-0.032	0.011	-2.948	0.003
Infant-toddler^2	ξ_{11}	0.082	0.015	5.555	3.000e-08
Preschool^2	ξ_{22}	0.147	0.033	4.460	8.190e-06
Schoolage^2	ξ_{33}	0.032	0.010	3.210	0.001
Wage1^2	γ_{11}	0.202	0.055	3.639	2.74e-04
Wage2^2	γ_{22}	0.069	0.080	0.865	0.387
Wage3^2	γ_{33}	0.102	0.052	1.960	0.050
Wage1 * Wage2	γ_{12}	-0.092	0.053	-1.742	0.081
Wage1 * Wage3	γ_{13}	-0.110	0.038	-2.915	0.004
Wage2 * Wage3	γ_{23}	0.083	0.053	1.571	0.116
Space	β_1	0.205	0.044	4.687	2.770e-06
Space^2	β_2	-0.003	0.023	-0.147	0.883
Wage1 * Space	δ_1	0.010	0.014	0.747	0.455
Wage2 * Space	δ_2	-0.013	0.018	-0.698	0.485
Wage3 * Space	δ_3	0.017	0.015	1.106	0.269
Wage1 * Infant-toddler	μ_{11}	0.015	0.005	3.090	0.002
Wage1 * Preschool	μ_{12}	-0.015	0.011	-1.385	0.166
Wage1 * Schoolage	μ_{13}	-0.001	0.004	-0.145	0.885
Wage2 * Infant-toddler	μ_{21}	-0.007	0.005	-1.406	0.160
Wage2 * Preschool	μ_{22}	0.022	0.014	1.633	0.102
Wage2 * Schoolage	μ_{23}	-0.004	0.005	-0.902	0.367
Wage3 * Infant-toddler	μ_{31}	-0.006	0.004	-1.346	0.178
Wage3 * Preschool	μ_{32}	-0.007	0.011	-0.645	0.519
Wage3 * Schoolage	μ_{33}	0.002	0.004	0.470	0.639
Space * Infant-toddler	Φ_1	0.002	0.011	0.171	0.865
Space * Preschool	Φ_2	-0.087	0.034	-2.534	0.011
Space * Schoolage	Φ_3	0.017	0.011	1.528	0.126
Quality	τ_1	0.400	0.112	3.584	3.390e-04
Quality^2	τ_2	0.308	0.213	1.444	0.149
Quality * Space	τ_3	-0.007	0.110	-0.067	0.947
Quality * Wage1	Ω_1	-0.212	0.040	-5.237	1.600e-07
Quality * Wage2	Ω_2	0.035	0.052	0.677	0.498
Quality * Wage3	Ω_3	0.228	0.044	5.192	2.100e-07
Quality * Infant-toddlers	ψ_1	0.011	0.029	0.377	0.706
Quality * Preschool	ψ_2	0.028	0.072	0.386	0.700
Quality * Schoolage	ψ_3	-0.022	0.029	-0.756	0.450
Profit	ω_1	-0.041	0.034	-1.198	0.231
Specreg	ω_2	0.181	0.064	2.810	0.005
Pubsupp	ω_3	0.081	0.051	1.576	0.115
Public Auspice	ω_4	0.036	0.061	0.585	0.559
National Chain	ω_5	-0.021	0.052	-0.407	0.684
California	ω_6	-0.197	0.044	-4.496	6.940e-06
Colorado	ω_7	-0.130	0.042	-3.085	0.002
North Carolina	ω_8	-0.298	0.046	-6.426	0.000
LAMBDA1	λ	0.206	0.049	4.196	2.721e-05

Table 12.2
Cost Function with Structural Quality

VARIABLE NAME	PARAMETER	COEFFICIENT	STD. ERROR	t - STATISTIC	SIGNIF. LEVEL
Constant	α_0	12.643	0.070	179.539	0.000
Wage1	α_1	0.173	0.017	10.110	0.000
Wage2	α_2	0.371	0.020	18.374	0.000
Wage3	α_3	0.271	0.018	15.033	0.000
Infant-toddler	π_1	0.315	0.080	3.917	8.976e-05
Preschool	π_2	0.303	0.079	3.842	1.218e-04
Schoolage	π_3	0.010	0.032	0.298	0.766
Infant * Preschool	ξ_{12}	-0.177	0.075	-2.348	0.019
Infant * Schoolage	ξ_{13}	0.030	0.022	1.367	0.172
Preschool * Schoolage	ξ_{23}	-0.066	0.033	-1.981	0.048
Infant-toddler^2	ξ_{11}	0.155	0.092	1.685	0.092
Preschool^2	ξ_{22}	0.171	0.070	2.430	0.015
Schoolage^2	ξ_{33}	0.017	0.020	0.854	0.393
Wage1^2	γ_{11}	0.345	0.089	3.894	9.873e-05
Wage2^2	γ_{22}	0.216	0.120	1.792	0.073
Wage3^2	γ_{33}	0.137	0.073	1.866	0.062
Wage1 * Wage2	γ_{12}	-0.229	0.082	-2.804	0.005
Wage1 * Wage3	γ_{13}	-0.139	0.057	-2.432	0.015
Wage2 * Wage3	γ_{23}	0.103	0.076	1.368	0.171
Space	β_1	0.310	0.068	4.560	5.110e-06
Space^2	β_2	-0.018	0.035	-0.510	0.610
Wage1 * Space	δ_1	-0.028	0.023	-1.223	0.221
Wage2 * Space	δ_2	0.021	0.027	0.767	0.443
Wage3 * Space	δ_3	0.014	0.023	0.617	0.537
Wage1 * Infant-toddler	μ_{11}	0.053	0.019	2.853	0.004
Wage1 * Preschool	μ_{12}	-0.034	0.021	-1.649	0.099
Wage1 * Schoolage	μ_{13}	-4.506e-04	0.008	-0.058	0.953
Wage2 * Infant-toddler	μ_{21}	0.004	0.022	0.165	0.869
Wage2 * Preschool	μ_{22}	0.027	0.024	1.136	0.256
Wage2 * Schoolage	μ_{23}	0.009	0.009	1.003	0.316
Wage3 * Infant-toddler	μ_{31}	-0.054	0.019	-2.847	0.004
Wage3 * Preschool	μ_{32}	0.010	0.021	0.509	0.611
Wage3 * Schoolage	μ_{33}	-0.019	0.009	-2.032	0.042
Space * Infant-toddler	Φ_1	-0.135	0.073	-1.843	0.065
Space * Preschool	Φ_2	0.098	0.078	1.263	0.206
Space * Schoolage	Φ_3	0.016	0.028	0.567	0.571
Staff-Child Ratio	υ_1	0.013	0.046	0.275	0.783
Group Size	υ_2	0.016	0.052	0.311	0.755
Turnover	υ_3	0.014	0.029	0.473	0.636
Education	υ_4	-0.063	0.028	-2.250	0.024
Experience	υ_5	-0.030	0.027	-1.087	0.277
Tenure	υ_6	0.005	0.040	0.121	0.903
% Infants	υ_7	-0.216	0.093	-2.313	0.021
Center Age	υ_8	0.033	0.031	1.063	0.288
Profit	ω_1	-0.103	0.051	-2.014	0.044
Specreg	ω_2	0.169	0.116	1.454	0.146
Pubsupp	ω_3	-0.005	0.080	-0.059	0.953
Public Auspice	ω_4	-0.161	0.103	-1.561	0.119
National Chain	ω_5	-0.095	0.061	-1.559	0.119
California	ω_6	-0.226	0.071	-3.194	0.001
Colorado	ω_7	-0.213	0.061	-3.497	4.70e-04
North Carolina	ω_8	-0.383	0.072	-5.351	9.000e-08
LAMBDA1	λ	0.335	0.117	2.867	0.004

Table 12.3

Substitution and Labor Demand Elasticities

Elasticities of substitution between inputs. $\sigma_{ij} = (\gamma_{ij}/\alpha_i \alpha_j) + 1$ ($\sigma_{ij} > 0 \rightarrow i,j$ substitutes)	
	Sunbstitution Elasticity
Workers with education < 12 years (1) & Workers with education 13-15 years (2)	-0.12
Workers with education < 12 years (1) & Workers with education 16+ years (3)	-1.26
Workers with education 13-15 years (2) & Workers with education 16+ years (3)	2.02
Constant output labor demand elasticities	
Workers with education < 12 years (1)	0.13
Workers with education 13-15 years (2)	-0.44
Workers with education 16+ years (3)	-0.33

Chapter 13

Models of Quality in Early Childhood Care and Education

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INTRODUCTION

Child care quality has been a matter of some interest for generations, and has been studied statistically for the last 20 years. Most of these studies have focused on a single or small number of variables to explain quality. Few previous studies have examined factors simultaneously to determine which structural factors provide the strongest independent prediction of process quality. Factors that have related to the quality of care received by children in child care include state, profit sector, teaching staff characteristics, and selected aspects of the classroom and center structure. State and sector differences in quality have emerged in analysis of the National Child Care Staffing Study (Whitebook et al, 1989) and a more recent multi-site study (Phillips, et al.). Centers in states with more stringent child care regulations have been shown to have higher quality than centers in states with less stringent regulations in these two large-scale studies (Phillips, Howes, & Whitebook, 1992; Phillips et al., in press).

Teaching staff characteristics have been good predictors of child care quality and child outcomes. Teachers with more formal education, on average, provide higher quality care (Hayes et al., 1990; Whitebook et al, 1989) and have children with higher levels of social competence (Clarke-Stewart & Gruber, 1984). Amount of specialized training in early childhood development has been related to better child care (Ruopp et al., 1979) and children's social and academic development (Howes & Olenick, 1986; Whitebook et al, 1989). Amount of child care experience has been shown to be negatively related to classroom quality and child outcomes (Dunn, 1993). Teaching staff wages have been shown to be one of the most salient predictors of child care quality in two large scale studies (Whitebook et al, 1989; Phillips et al. in press). Phillips and her colleagues found that the teaching staff wage was a highly significant predictor, even after adjusting for characteristics such as education and experience that wages are assumed to purchase.

Classroom characteristics also have proven to be good predictors of child care quality. That classrooms with better staff to child ratios tend to provide better care has been demonstrated across a number of studies (cf. Doherty, 1991; Hayes et al, 1990; Whitebook et al, 1989). There is some evidence that smaller group sizes are also related to better quality (Ruopp et al., 1979). The amount of space per child and the quality of the space in the center has been suggested as another factor that defines good process quality (Doherty, 1991).

Center characteristics have been weakly linked to the classroom process quality. Centers with larger enrollments have been shown to provide poorer quality care (cf. Doherty, 1991). There is some evidence that centers that are willing to provide infant or toddler care tend to provide lower quality care (Doherty, 1991).
The relation between the center administrator's characteristics or administrative effectiveness has not been widely examined. While it is

clear that administrators can have a major impact on the quality of care in schools, the child care literature has not examined this aspect of child care centers in much detail (Culkin, 1994).

In summary, much is known about the relations between some individual aspects of structural measures of quality and the quality of the child care classroom, but few previous studies have examined all of these structural characteristics jointly. Only such analyses can help identify which characteristics most strongly and independently relate to classroom quality. Accordingly, this chapter reports analyses which identify the characteristics or variables that are most predictive of child care quality when a large number of these factors are included in the analysis. It also reports econometric results which carries the analysis one step further by predicting the magnitude of change in quality created by given changes in the explanatory variables. Because of the cross disciplinary nature of this research and our interest in honoring the different research traditions represented in the research, parallel analyses were carried out, with somewhat different results. The conclusion to this chapter will compare the two analyses.

Methodology

The style of estimating the model is different in economics than in psychology as the goals of model building are somewhat different. The psychologists seek to test a statistical hypothesis, holding as closely as possible to the standard theoretical assumptions of statistics. Their analysis of observed data is formally noncausal as it doesn't involve the experimental design believed necessary to control for confounding variables. Therefore, interpretation is limited to what variables are significantly associated with the dependent variable. They limit the number of regression runs to minimize type one error. Hierarchical procedures are often used to examine multiple sets of predictors, with these sets entered in a theoretically determined order (in this case, proximity to the child). If a variable is a significant predictor when entered, but becomes insignificant after others are added to the model, then the difference is noted and interpreted.

Economists are more concerned about causality, because they are interested in using the estimated model for prediction. They start with a theoretical model that postulates a causal relationship between the dependent variable and the independent variables. The test is to find out if the data are consistent with that model. As such, bias due to omitted variables becomes a paramount consideration (Greene, 1990). If a relevant variable is omitted, then any variable in the model that is correlated with the missing variable will have a biased estimated effect. If an irrelevant variable is included, it will have a nonsignificant coefficient and will not matter. Therefore, the economist will risk including too many variables rather than too few. Multicollinearity is dealt with by running joint tests of significance and identifying the cluster of variables that is significant even if the single variables are not. The resulting unbiased coefficients from a properly specified econometric model can be used to predict the effect on quality of changing any of the independent variables. Often this is done through the estimation of elasticities.

Both disciplines will use quadratic or other nonlinear forms when theory justifies doing so, and providing the estimation procedure validates that form.

This chapter attempts not to argue for one methodology over another, but to see how the two methodologies differ in their result and how the two confirm each other.

HIERARCHICAL REGRESSION AND DISCRIMINANT ANALYSIS

METHOD

This section describes an hierarchical regression and a discriminant analysis undertaken to identify important variables explaining quality in ECE centers.

Measures

The Dependent Variable, Process Quality. In all analyses described in this chapter quality of care was represented by the center-level process quality index, a weighted mean of the ECERS or ITERS total score, the Caregivers Interaction Scale (CIS) total score, and the proportion of the time that the teacher was responsive to the children during observation (see Chapter 6 for more detail regarding the construction of the quality index). The quality was examined in two ways, as a continuous measure that represented the spectrum of care, and as a categorical measure. Quality was treated as a continuum in regression analyses designed to identify the magnitude of association of various measures of structural quality with process quality. In contrast, quality of care was categorized into poor, mediocre, and good quality in a discriminant analysis designed to determine which structural characteristics most successfully distinguish among poor, mediocre, and good quality centers.

The Explanatory Variables. Structural characteristics that may affect quality were selected based on either previous work or on developmental or economic theory. The two regression analyses included seven sets of predictor variables. As much as possible, the same variables were included in both the hierarchical regression and econometric analyses. Listed below are the measures used in the hierarchical regression analysis in the order and in the clusters in which they were introduced in the analysis. Differences in approach taken in the econometric analysis will be described in that section of this chapter. The discriminant analysis included an additional set of predictors, the eighth cluster of variables listed below.

1. State and Profit. All regressions included the factors used to select the sample - state and profit sector. As described in Chapter 3, the states varied markedly in terms of the child care licensing standards. The analysis also included an interaction term between state and sector.

2. Teacher Characteristics. "Human capital" or teacher background and experience factors examined included measures of education, early childhood training, age, experience, tenure, and ethnicity. Teacher education was represented by the proportion of the teaching staff with a baccalaureate degree. Early childhood training was represented by the proportion of the teaching staff with at least a CDA. Teacher background variables included the average age, years of experience, and tenure at that center of a center's teaching staff, weighted by the hours worked by each employee (i.e., a full-time employee was given more weight in computing these averages than the part-time employee). Lastly, the ethnicity of the staff was represented by the proportion of staff who were not white/non-Hispanic.

3. Wages of Teaching Staff. The mean wage of teaching staff, weighted by hours employed for each staff member, was included. Wages were adjusted for cost-of-living differences among the four sites.

4. Classroom Structure. Five classroom structural measures of quality were selected: the weighted mean adult-child ratio during midmorning inside activities for the two classes observed in the center (weighted by percent of center enrollment in the age group), the weighted mean midmorning group size for the two classes, the square feet of inside space per child, the observer's rating of the quality of that space, and hours of volunteer service per FTE child.

5. Center Structure. Measures of center structure included the total number of FTE children enrolled in the center, a measure of program scope equal to the number of different types of programs provided by the center, the proportion of the total enrollment made up of either infants or toddlers, the proportion of FTE children who received a subsidy to attend child care, whether the center provided before or after school care to school-age children, and the center's age, hours of operation, and turnover rate for teachers.

6. Administrator Characteristics. The administrator's background and effectiveness was measured with a total of eight variables. Background variables included the administrator's years of education, age, prior

experience, and tenure in the current job. The administrator's effectiveness was assessed by teacher ratings of center organization, the administrator's participation in the ECE professional community, the administrator's involvement in curriculum planning, and her/his participation in community service. Failure of some teachers to return the teacher questionnaire produced missing assessments of the administrator's effectiveness in a few centers.

7. Auspice and Public Support. For- and nonprofit subsectors and public involvement in the center were compared. These included subdividing the for-profit and nonprofit centers into six categories: independent for-profit, local system, national system, independent nonprofit, church-affiliated, and public center. Also included were categorical variables identifying whether or not the center received public support amounting to at least 50% of its budget in the form of fees or other subsidies and whether public support required the center to meet additional standards beyond those required of other centers in the state.

8. Costs and Fees. A final set of structural variables was included in the discriminant analysis but not in the hierarchical analysis. They included total labor costs per child hour, total costs per child hour, average hourly preschool fees, and maximum monthly preschool fees. These costs and fees were adjusted for cost-of-living differences among the four sites.

In the discriminant analysis, variables were also added to identify whether or not the center was a worksite center, whether it was accredited, and to include the wage rate of the administrator. The discriminant analysis omitted teacher age, experience, tenure, percent minority staff, center space quality, program scope, and the administrator effectiveness variables related to organization and involvement with the ECE community.

Attrition

Included in the analysis were the data describing 352 centers, omitting data from 44 centers that were missing at least one of the variables described above. Before conducting the analyses relating structural measures to the quality of child care, tests were made to determine whether the subsample of centers with incomplete data differed substantively from the centers with complete data. The means on the 28 process and structural quality measures included in the regression analyses were compared for centers with and without complete data. Modest differences on only two of these variables emerged. Centers with and without complete data differed modestly on the total enrollment (t(397=2.3), p=.02). Centers with complete data (M=70, sd=48) were slightly larger than centers with incomplete data (M=53, sd=31). Similarly, on the proportion of subsidized children at the center (t(397=2.9), p=.003), centers with complete data (M=.21, sd=.30) had proportionately fewer subsidized children than centers with incomplete data (M=.36, sd=.41). The relatively small proportion of significant differences indicate that analysis of the subset of centers with complete data is not likely to result in major bias.

Analysis Plan

The analysis plan involved three sets of analyses. The first analysis was descriptive. The zero-order correlation among the process and structural quality measures were examined to identify the structural measures most highly correlated with process quality and to identify highly correlated explanatory measures.

The second analysis was inferential, performing hierarchical regressions in which process quality was regressed onto the first seven sets or "chunks" of structural variables. Hierarchical regression involves fitting a series of regression models to data such that successive chunks of variables are added to the analysis model in a specified order. This approach describes the association between process quality and each set of predictors, conditional on adjusting for the variables already in the model. Regression coefficients for individual variables within a chunk are examined only if the entire chunk of variables significantly contributes to the regression model (i.e., only if the increase in R^2 for that set of variables is significantly greater than zero). This analytic model allowed the examination the model displayed in Figure 2.1 by first including characteristics that are thought to be most directly related to classroom quality and then successively looking at characteristics more removed from the classroom.

In this hierarchical regression the seven sets of regression models were fit to the data. The first model included the first set of variables, state and profit status. The second included the first two sets of variables, state, profit, and the teacher's background variables. Each successive regression involved adding another chunk of variables to the model. In preliminary analyses, linear and quadratic terms were included for all of the teaching staff characteristics, teaching staff wage, and classroom structure variables to identify nonlinear associations. All nonsignificant quadratic terms were omitted from the final analysis.

The third analysis was also regarded as inferential. A discriminant analysis was performed to identify the structural characteristics that discriminate among poor-, mediocre-, and good-quality centers. This analysis compared the mean scores of poor-, mediocre-, and good-quality centers in multivariate analyses to determine the extent to which each of the selected structural characteristics jointly and individually discriminated among centers with the three levels of quality.

RESULTS

Correlations

Process and structural measures. Pearson product-moment correlations between the quality process index and each of the continuous measures of structural characteristics are reported in Table 13.1 for the entire sample and separately for nonprofit and for-profit centers. Most of the selected structural variables showed modest, but significant, simple correlations with process quality for the entire sample and within sector. The strongest correlates were teaching staff wage, teacher education, teacher early childhood training, and labor costs.

Correlations among structural measures. Intercorrelations among the structural measures were examined to ensure that interpretation of the subsequent regression analyses would not be confounded by the inclusion of highly correlated independent variables. These analyses (not tabled) indicated that caution was needed when building regression models involving teacher education and training, teacher background and wages, and administrator's education and other background.

As previously reported in other studies such as the NCCSS (cf. Doherty, 1991), measures of teaching staff education and early childhood training were highly intercorrelated. The lowest and highest measures of education and training were almost redundant. The proportion of teachers with a high school education or less was highly related, negatively, to the proportion having a CDA or better ($r=-.87$). The proportion of teachers with college degrees also was highly related to the proportion with college degrees related to early childhood ($r=.84$). It was also not surprising that the correlations among the three education variables and the three early childhood training variables was very high ($.41 <= |r| <= .81$). It appears that we can not distinguish between the relative importance of formal education in general and early childhood training specifically. Accordingly, we selected to include the proportion of staff with at least a BA/BS as the measure of teacher education, and the proportion of teaching staff with at least a CDA ($r=-.34$) as the measure of early childhood training with the understanding that these are not fully separable constructs with these data.

The average teaching staff wage was moderately correlated with teaching staff education and experience. Teaching staff wage correlated with proportion of staff with high school or less education ($r=-.43$), with BA/BS ($r=.36$), with a CDA or better ($r=.38$), with a

AA degree in early childhood or better (r=.44), and with a BA/BS degree in early childhood or related fields (r=.39). In addition, wage was correlated with teaching staff tenure (r=.46) at that center and with experience in general (r=.24). Both teaching staff characteristics and wages were included in the regression analyses despite these correlations to address questions about whether teacher wages contribute to quality beyond the extent to which they allow the center to hire better educated individuals to teach.

The administrator's characteristics also tended to be intercorrelated. Age correlated with tenure (r=.51) and experience (r=.36). Center age was moderately correlated with the administrator's tenure (r=.43). Two aspects of the teachers' ratings of administrator effectiveness were highly correlated, the administrator's participation in the ECE professional community and his/her participation in community service (r=.59). All of the listed director characteristics were included in analyses despite these correlations because previously the administrator's qualifications and management style had not been examined extensively with respect to child care quality.

Hierarchical Regression Analysis

A hierarchical regression analysis was performed in which each chunk of variables was added successively. Results of these analyses are reported in Table 13.2 by listing the overall fit and standardized regression coefficients for each of these models. Interpretation of the results reported in Table 13.2 involves first determining whether each chunk of variables significantly added to the regression model when they were entered hierarchically and then, if they did, determining which individual variables were significantly associated with child care quality.

The results of the hierarchical regression analysis indicate that state and auspice, teaching staff education and ECE average teaching staff wage, adult-child ratios, and the experience of the administrator all independently contribute a child care center's process quality. In order of entry to the model, the hierarchical regression indicated that: (1) state and sector are significantly related to child care quality, with for-profit centers in North Carolina providing substantially poorer care than other centers when only state and sector were considered; (2) teaching staff background characteristics also contributed significantly, with teacher education being the teacher background variable most strongly related to child care quality and the proportion of the staff who were minority having a modest negative association with child care quality; (3) teaching staff wage contributed significantly to predicting quality, even when teacher background variables, state, and sector were considered; (4) classroom characteristics provided significant prediction when added at this level, with adult-child ratios substantively related to quality after adjusting for the previously entered chunks of variables; (5) center structure variables did not reliably contribute beyond the previously entered chunks; (6) administrator characteristics added marginally, with administrator experience and curriculum involvement being the most important predictors; and 7) auspice affected quality substantially, even adjusting for all the previous chunks of variables, with church-affiliated centers providing significantly lower quality care after adjusting for these structural measures of quality. In contrast, examination of the final model shown in the last column of Table 13.2 indicates that adult-child ratios, teaching staff wages, the administrator's tenure, experience, curriculum involvement, and center auspice all independently predict child care quality when all structural variables are included in the analysis.

A follow-up analysis was performed to test whether the relations between these structural variables differed for for-profit and nonprofit centers. A model that included interactions between profit status and each of these structural variables was fit to the data. This analysis did not indicate that there were substantial interactions related to either state or profit status that were ignored in the hierarchical regression analysis described in Table 13.2. Neither the overall test of whether these interaction terms collectively added to the prediction of process quality ($F(27,314)=.88, p>.10$) nor tests of the individual interactions terms provided convincing evidence of different patterns of associations by sector. Only one interaction term, Profit x Center Age, was significantly different from zero ($F(1,314)=5.89, p=.016$), with center age showing a positive relation with quality for nonprofit centers and a negative relation for for-profit centers. It is very likely that at least one significant interaction term could be expected in this many tests. Accordingly, these results do not suggest that there are different patterns of association between structural and process quality for nonprofit and for-profit centers.

Overall, the number of children per adult and teaching staff wages were the most significant factors in predicting classroom quality identified in these analyses, with higher quality observed in classes with fewer children per adult. The second most significant factor in predicting quality was the mean teaching staff wage. Centers offering higher wages tended to provide better quality care. This association between teaching staff wage and classroom quality was obtained despite controlling for traditional measures of teaching qualifications such as education, special training, and experience. The teaching staff's education also was positively related to child care quality, with higher quality centers having a higher proportion of their staff with at least a baccalaureate degree. However, this finding was obtained prior to considering wage, but not when wage was jointly considered. That is, these findings suggest that association between child care quality and teaching staff wages is not solely due to wages purchasing staff characteristics such as education as would be predicted under economic theory. It is likely that wages represent other unmeasured characteristics of the teaching staff and the centers, especially in this low-wage field.

Child care quality was also modestly related to the administrator's years of prior experience in child care and administrative effectiveness. Administrators with more prior experience in child care or at the center in particular, and who were more involved in curriculum planning tended to direct higher quality centers. The administrator characteristics as a set were only marginally associated with child care quality when they entered the hierarchical regression, but several factors provided independent prediction when the entire model was fit to the data. Thus, these findings need to be interpreted cautiously, but provide interesting evidence suggesting that directors have an impact on classroom quality.

Quality was also related to several other factors. Quality was significantly lower among certain subgroups of centers. The for-profit centers in the least regulated state, North Carolina, had substantially lower quality, even after adjusting for the human capital, classroom structure, center structure, and administrator's characteristics. Similarly, lower quality was observed among church-affiliated centers than among independent nonprofit or centers in national systems, even after adjusting for all other predictors. These findings suggest that the differences in the selected characteristics of the staff, classroom, center, and director do not fully account for differences in quality between for-profit and nonprofit centers in North Carolina (see Chapter 6 for mean comparisons) and between church centers and other nonprofit centers (see Chapter 11 for mean comparisons). That is, even after adjusting for the poorer adult-child ratios, educational level of teachers, and other differences, the church-affiliated centers and for-profit centers in North Carolina still are deemed to be of poorer quality.

These analyses suggested that there is some nonlinearity in the conditional relations between some of the more significant predictors and child care quality. These nonlinear relationships suggest that bigger increases in quality are associated with improving ratios or wages if the ratios or wages were initially low than if they were initially high. That is, the difference in quality is expected to be greater when centers with low and average wages are compared than when centers with average and high wages are compared.

Discriminant Analysis

A discriminant analysis was performed to identify the factors that are most able to distinguish successfully among centers offering poor, mediocre, or good quality child care. Quality was categorized as "poor quality" if the center's mean ECERS/ITERS scores or the classroom quality index scores scaled to the ECERS was below 3, as "good quality" if either score was 5 or higher, and as "mediocre" otherwise. A discriminant analysis compared the mean scores for poor, mediocre, and good quality centers on the selected subset of the factors representing teacher background and experience, classroom structure, center structure, and administrator background and effectiveness, and costs and fees (see Table 13.3 for a listing of these variables, the groups means, the discriminant weight, and a comparison of group means).

The discriminant analysis was able to classify 67% of the centers into their correct quality classification based on the selected teacher, classroom, center, cost, and administrator factors. This was much better than would have occurred by chance (F(68,544)=2.6, $p<.0001$). These factors together were especially good at identifying low quality centers, with 80% of low quality centers correctly classified. They were only moderately successful at identifying mediocre (64%) and good (58%) quality centers. The incorrectly classified mediocre centers were about equally likely to be classified as good quality (19%) as they were poor quality (17%) centers. Few of the good quality centers were incorrectly classified as low quality (9%) and almost none of the low quality centers were incorrectly classified as good quality centers (2%). These results suggest that the selected structural quality measures are very good at predicting whether a center provides low quality care and only moderately helpful in discriminating between mediocre and good quality care.

The discriminant analysis also indicated the degree to which each factor contributed to discriminating among the low, mediocre, and good quality centers (F(68, 544)=2.6, $p<.0001$). The discriminant weights, reflecting the relative importance of each variable factor, are listed in Table 13.3. The most discriminating factors tended to the teacher characteristics (including wage) and cost factors. Significantly, the most discriminating factors listed in order of their relative contribution included teacher wage (weight=.67), teacher education (.53), labor costs (.48), hourly preschool fee (.46), and maximum monthly preschool fee (.44), teacher ECE training (.44), whether the center was publicly run (.42), hours of operation (-.41), and total cost per child hour (.40).

Individual univariate comparisons of the 3 quality groups were also performed on each variable. Listed in Table 13.3 for the continuous variables are the group means and standard deviations, the weights, the ANOVA that compared these means, and contrasts. Listed for the categorical variables are the quality group proportions and standard deviations, a chi-square test that compared these proportions, and contrasts. These univariate comparisons indicate that the most discriminating factors showed the anticipated trends with low quality centers having the least desirable values, mediocre centers having better values, and good quality centers having the highest values on most of these variables. That is, the labor costs, preschool fees, the director's education, and the teaching staff wages, education, turnover, and training were highest among good quality centers, lower among mediocre quality centers, and lowest among poor quality centers. The hours of operation were longer among poor and mediocre centers than among good quality centers. The proportion of public centers was lower among poor quality centers than among mediocre or good quality centers.

In contrast, it is interesting to note that some variables that correlated with quality did not discriminate among these three quality groups. These include auspice factors such as local chain, national chain, and church-affiliated. This provides further support that there are very good as well as very poor quality centers in each auspice - that these three types of centers can provide the full spectrum of quality of care.

CONCLUSIONS FROM HIERARCHICAL REGRESSIONS AND DISCRIMINANT ANALYSIS

These three analyses provide consistent support that adult-child ratios, the teacher's education and wages are related to quality. The regression analysis indicated that the adult-child ratio is the single most important factor in determining child care quality, whereas the discriminant analysis suggested that teaching staff wage is the single most discriminating factor. These analyses also provide some limited, but intriguing evidence that characteristics of the administrator influence child care quality.

Most of these findings are consistent with the previous child care literature. The ratio of the number of adults and children in the classroom has been shown to be a strong predictor of classroom quality in previous studies (cf. Hayes et al., 1990). This study affirms the importance of this factor in determining quality child care. Similarly, as in many previous studies (cf. Doherty, 1991) all three sets of analyses in this study indicated that the education and training of the teaching staff are related to the classroom quality. Centers with teaching staff with more education and training were much more likely to provide children with higher quality care.

This study suggests that the center's administrator, as well as teachers, influences classroom quality. The regression analysis indicated that centers with more experienced administrators and administrators who were more involved in curriculum planning tended to provide higher quality care. The discriminant analysis indicated that the administrator's education level was highest among good-quality centers, lower among mediocre-quality centers, and lowest among poor quality centers. This is not surprising given the precarious financial situation of many centers and the multitude of roles that child care center administrators are expected to play.

Finally, this study provides further evidence that child care centers that provide their teaching staff with higher wages also provide their children with higher quality care. These results are consistent with the two previous studies that included teaching staff wages as a predictor of child care quality (Phillips et al, in press; Whitebook et al., 1989). The consistent association between teaching staff wages and process quality in correlational, regression, and discriminant analyses suggest that wages index other factors that are not measured by teaching staff training, education, experience or by the center and classroom structure. This is not surprising given the very low wages of the child care workers in this study and previous studies. These omitted factors may include the degree of commitment by the administrator to the staff and the general morale of the staff. It is possible that morale is depressed if teaching staff are paid wages close to minimum wage and can barely afford minimal living expenses. Centers that offer above market wage rates, especially to their most able teachers, are displaying a commitment to their staff and are able to hire the better staff away from other centers. It is likely that staff will respond positively in their work in a setting where they feel valued and if they feel that they are making a wage that permits them a decent living. In addition, it has been demonstrated that women living in poverty are likely to be psychologically depressed by their poverty and unable to interact with their own children in a responsive or stimulating manner (McLoyd, 1990; 1994). When we have caregivers living in low-income families we might expect the same psychological distress to interfere with their capacity to provide good care. This is especially true when child care teachers do not have the same level of emotional attachment to the child as do parents. Finally, it is likely that good-quality centers selectively recruit good teachers from other centers by offering them a higher salary than they would typically receive given their education, training, age, and experience.

These findings and the findings from previous large-scale studies suggest that to increase the quality of child care, centers should increase the wages of their competent teachers along with increasing adult-child ratios and hiring better educated and trained staff.

ECONOMETRIC MODEL

Description of the Model

The econometric model is similar to the hierarchical regression model, but starts from a different disciplinary perspective. The model is based on the production function for center quality. The approach is to estimate the effects of all relevant variables simultaneously and then to test for effects of intercorrelation among the independent variables. The model seeks to explain overall center-level process quality in the 400 centers of our study. The center-level quality index was the same as that used in the hierarchical regression - the average of room-level quality indices, weighted by the percentage of FTE children who were infants/toddlers and the percent who were preschoolers.

The final model was based on earlier estimations experimenting with linear and quadratic specifications, and with alternative measures of some of the variables. It was estimated using the entire sample and then separately using for-profit and nonprofit subsamples. The all-center test provided results similar to those found in the hierarchical analysis presented above. The results for nonprofit and for-profit sectors provide a clearer picture of the two sectors, suggesting similarities and some differences in the determinants of quality. Table 13.4 summarizes results of the three estimations.

The model postulates that center quality depends on the quantity and quality of each of the inputs into ECE and on the skill with which they are assembled into a working center (which depends on the quality of the administrator). Hence variables are needed to describe the teaching staff, the physical plant, and the administrators. Quality also depends on the clientele with whom the center is working, hence the characteristics of the children are relevant. The location and ownership structure of the center may relate to the production of quality from a given set of inputs (staff, administrators and plant) if state regulations matter and if for-profit and nonprofit centers have different objective functions. Economies of scale and scope may affect quality as well as cost, suggesting the inclusion of an enrollment size variable and variables for the scope of programs offered and the mix of age groups in the center.

Despite the different origins of the econometric and hierarchical regressions, the resulting models showed substantial overlap. The variables in the econometric model included all of the variables in the hierarchical model except for (1) space quality, (2) the local for-profit chain dummy, and (3) some auspice by state interactions. It also included the following additional variables omitted from the hierarchical regressions: (1) percent of FTE enrollment who were minority children, (2) the percent who were preschool, and (3) center training cost per FTE staff. Finally, the econometric model treated two categories of variables differently: staff wages and program scope. The model is described below.

Inputs. Inputs to child care included teaching staff characteristics, staff wage rates (as a proxy for unobserved staff quality), training costs per FTE staff, square feet per child, volunteer hours per FTE child, classroom structure (staffing ratios and group size), and administrator characteristics. Stability of the staff was also included in this group of variables as measured by the annual turnover rate of the lead persons in the classroom (teachers plus teacher-directors). Quality of center space was ultimately omitted from the analysis because it was not significant in any of the specifications. Staffing ratio and group size were specified in quadratic form, all other variables in linear form.

The wage rates were differentiated by three educational background levels: staff with high school or less education; staff with some college background; those with at least a bachelor's degree. Each of those rates was the weighted (by hours worked) average hourly rate for staff members with the relevant educational background. By using three wage rates instead of the overall mean wage rate, the wage rate variables avoided confusing the effects of hiring better educated staff with those of paying for the noneducationally determined skills of the staff. However, the effects of collinearity of the three wage rate variables had to be taken into account in the interpretation of results.

Variables Describing Clientele. Having more poor, at-risk, or minority children may affect quality, holding all other inputs constant. Four variables tested for this effect: percent of children subsidized, percent of children from minority groups, percent of staff from minority groups, and presence of a bilingual program. The presence of a bilingual program appeared to measure English as a second language rather than enrichment for native speakers of English. All four variables were moderately correlated with each other and must, therefore be interpreted jointly.

Location and Ownership: To control for different state economic and regulatory environments, dummy (categorical 1,0) variables were included for the states of California, Colorado and Connecticut, and interaction dummies for profit sector and state. Other variables were included for auspices - church affiliated, public ownership, national system. Identification of quality differences related to a particular group thus requires combining these dummy variables to identify that group.

After the model was developed for the entire sample, it was run separately for for-profit and nonprofit centers to test for differences by profit status in the production of quality. As noted in Chapter 2, economists hypothesize that nonprofit and for-profit firms in a mixed industry may have different goals which may induce them to produce quality with a different technology. These differences, if they exist, might show up in different quality production functions.

Center Scale and Scope: The model included hours open per day, FTE enrollment, percent infant/toddlers, percent preschool-aged children (the remainder were school aged). It also included dummy variables identifying those centers which offered specific types of programs: part-day ECE, head start, part-day extended (supplementing another part-day program), public school sponsored programs, before- and after-school care, summer camp, evening care, weekend care, sick-child care. Separate variables were used for each program type because the programs were not necessarily related to each other. From an economics perspective the efficiencies of economies of scale and scope could affect quality favorably.

RESULTS

Estimations for all centers, nonprofit centers, and for-profit centers yielded R^2 values of .47 to .55, indicating that approximately half of the variation in the quality was explained by the variables of the model. The results reported below indicate the presence of significant determinants of center process quality, but leave much unexplained. This is likely because variables were omitted as being beyond our ability to include, or the included variables were measured imprecisely.

All Centers

The full model for all centers was estimated using observations for the 331 centers for which the data set was complete.[1] For many of the structural quality variables generally considered to be related to process quality, coefficients showed expected signs and were statistically significant. Table 13.4 indicates that coefficients for the following variables were significant at the 5% level using a two-tailed test:

Inputs to ECE. The prime-time morning ratio of staff to children was positively related and the squared ratio negatively related to process quality, indicating that quality increases at a decreasing rate with increases in the ratio of staff to children. Substitution of other measures of staffing ratios collected in the study yielded similar results. Among the several variables measuring staff general education and more specific training, the proportion of all teaching staff with a college degree or more was positively related to quality. Variables measuring specialized training were not significant, but were highly correlated with general education and the effect should be interpreted as a combined effect. The mean center wage rate of teaching staff with twelve years or less of formal education was positively related to center quality, although mean center wage rates of teaching staff with more education were not. Both years of previous experience and tenure in the current job of center administrators were positively related to quality, as was the mean score teacher evaluation of administrators' curriculum involvement. Inside square feet per FTE child was positively related to quality. Turnover of teachers and teacher-directors was negatively related to quality.

The coefficients on the variables for wages of staff with more than high school education were insignificant in most tests of the model and appeared to mask the effects of the wage rate of the less educated staff and of staff education. They were therefore eliminated from the final version of the model.

Clientele. The percent of children subsidized, the presence of a bilingual program and the percent of minority staff and children were jointly negatively related to quality. Each of these variables seemed to have a weak independent effect (only bilingual program was significant alone), but combined, they were significant.

Location and Ownership. Among the several variables describing aspects of center location or ownership, several were significant holding all other variables constant. For-profit centers in North Carolina had lower quality than nonprofit centers in the same state. For-profit centers in California produced better quality than for-profits in North Carolina. National systems of for-profit centers produced better quality care than other for-profit centers. Church-affiliated centers produced lower quality care than other nonprofit centers.

Scale and Scope. The presence of a before- and after-school program was the only scope variable that was significant. This program was associated with lower quality care, all else equal. No scale variable was significant.

Notably Insignificant Variables. Wage rates for teaching staff with at least a baccalaureate degree were not significant in all estimates; this was usually, but not always the case with respect to wage rates for teaching staff with some college. When the mean wage rate for all teaching staff was included in the equation, its coefficient was signficant but masked the effects of teacher education on quality as it incorporated the mix of education levels into the wage average.

Profit status did not significantly affect quality in Colorado or Connecticut. FTE enrollment was also not significant and its coefficient was so small that, even if the upper or lower confidence limit were valid, reasonable changes in enrollment would have predicted only a small change in quality with size of center.

It should be noted that the individual signs and significance of these variables are not always informative by themselves. For example, a negative and significant coefficient of the interaction dummy between profit status and California indicates that California nonnational for-profits have lower quality than California nonchurch nonprofits. It does not imply that all for-profits have lower quality than nonprofits. That comparison would require evaluating all of the applicable dummy variables. In this case, one would have to average the effects of nonprofit, nonchurch, public auspice and church affiliated to estimate the total nonprofit sector. Similarly, the effect of the for profit sector is composed of the combined effects of the profit dummy and the national chain dummy.

These procedures revealed that, in general, there was no clear statistically significant difference between for-profit and nonprofit centers after controlling for the determinants of quality. If church affiliated centers and national systems were eliminated from their respective sectors, then for-profit centers were significantly weaker in North Carolina and for all states together, again holding all else constant.

Nonprofit Centers

The model for nonprofit centers was estimated using observations for 164 centers for which the data set was complete. The model was estimated using control variables related to programs offered, state and auspice. The base case where all dummies related to state, auspice, and public funding were zero was for private, nonprofit, other than church-affiliated, receiving no public support, in North Carolina. Table 13.4 indicates that coefficients for variables measuring the following structural quality characteristics were significant at the 5% level:

Inputs. The following variables were positively related to quality: proportion of the teaching staff with a college degree, mean wage rates for teaching staff without any college education, and the mean teacher ratings of the administrator's involvement in planning the children's curriculum.

Location, Ownership, and Clientele. Church-related centers produced lower and Head Start centers higher quality, holding all other variables in the model constant. Nonprofit centers in California provided better quality than in Connecticut. Poverty and minority status variables were not significant in nonprofit centers.

Differences from "All Centers". The prime-time morning ratio of staff to children was positively related to process quality, but not significant. Staff turnover and prior experience of the administrator were not significant. Poverty/minority variables were not significant singly or jointly.

For-profit centers

Results of estimating the quality equation for for-profit centers only were based on observations for 167 centers which had complete data. North Carolina local independent for-profit centers represented the base case (where state, auspice, and public funding dummies = 0). Table 13.4 shows that staffing ratios and stability of the staff were the overwhelming determinants of center quality:

Inputs. Staffing ratios were highly significant, dominating all other determinants of quality in the for-profit sector. The prime-time morning ratio of staff to children was positively related and the squared ratio was negatively related to quality, indicating that quality increased at a decreasing rate as ratios increase. Staff tenure and the tenure of the administrative director or owner-operator as director were positively related to process quality, while the teacher/teacher-director turnover rate was negatively related to quality and significant.

Scale and scope. The presence of a bilingual program (but not other minority or poverty variables) was negatively related to quality. An F-test indicated that the four were significant as a group. The significance of bilingual programs as opposed to more traditional poverty-minority indicators suggests something involving cultural values related to child care practices rather than poverty itself.

Ownership and Location. National systems provided better quality than other centers, holding other variables constant. California centers provided better quality care than North Carolina centers.

Comparison of for-profits with All Centers and Nonprofits

All three estimations explained a similar fraction of the variance, about half, in the quality of child care. The variables that were significant in either the for profit sector or the nonprofit sector were significant in the estimation for "all centers". However, different variables were significant in the two sectors.

The most notable difference between for-profit centers and nonprofits is the much higher coefficient and significance level of the adult-child ratio in the for-profit sector. Staffing ratio was insignificant in nonprofit centers.

Stability rather than the background of the staff and administrator seemed to be important in the for-profit sector. Staff turnover and administrator tenure at the center were significant in this sector, while staff education and administrator's support in curriculum development were significant in the nonprofit sector.

Inside space per child was positively associated with quality in all centers, but was not significant in either sector alone.

The poor and minority children seemed to play a role in both sectors, but did so differently. In the for-profit sector and the sample as a whole, the presence of a bilingual program was negatively associated with quality. In the nonprofit sector no minority variable was significant and the group of minority variables was only close to significant. It appears that some other factor offset any effect of poverty/minority status in the nonprofit sector.

In the for-profit sector, national systems provided better care, holding other variables constant, than other centers. In the nonprofit sector, Head Start centers performed better and church affiliated centers performed worse than other centers. In both sectors, California centers performed relatively well.

Magnitudes of Effect of Changes in Explanatory Variables

Any estimates of the effect of changing one variable on improving quality must be very tentative as the variable may be a proxy for an omitted (or even unmeasurable) variable and because some coefficients were sensitive to the exact model specification. Further, there may be undetected interactions that either intensify or reduce the effect of changing one variable in the model. Nevertheless, it is interesting to see that changing individual variables make modest differences in predicted quality. The following results are based on the estimations for "all centers" shown in Table 13.4.

Staffing ratio. The average ratio of adults to children in the classrooms was .186, or 1 adult to 5.4 children. An increase in this ratio to .28 (less than one standard deviation), or 1:3.6 predicts an increase in quality in the average center (index = 4.0) equal to .17 index points.

Baccalaureate education. In the average center 28% of all staff had baccalaureate degrees. Increasing this to 50% (one standard deviation) would increase predicted quality by .09 index points.

Wages. The average wage for a child care worker with no college education in the sample was $5.76 per hour. Increasing that wage by $1.00 per hour (less than one standard deviation) would increase predicted quality by .11 index points.

Turnover. Staff turnover in the sample averaged 34%. Reducing that by half, to ratios similar to the health industry in general, would increase predicted quality by .05 index points.

Administrators Effectiveness. The average administrator had 7.6 years of prior experience and 7.1 years of tenure in the center. Increasing these figures by 50% (less than one standard deviation) would increase predicted quality by .12 index points, combined. Improving the administrator's ranking on curriculum involvement by 4 points (one standard deviation) from average to very good would raise predicted quality by another .12 index points.

Location, Sector and Scope. Centers with more poor and minority children scored lower even after holding all else constant. A ten percentage point increase in percent subsidized reduced predicted quality by .04, a ten percentage point increase in minority children and minority staff combined reduced quality by .03.

National for-profit systems averaged .38 better in quality than other for-profit centers, holding all else constant.

Comparison of the Nonprofit and For-Profit Estimations

Tests were performed to determine whether the nonprofit sector and for-profit sector models are significantly different and to justify the estimation of separate quality production functions for nonprofits and for-profits separately. Separate models are needed if there is evidence indicating different structures affecting quality for the two sectors.

First, the model was estimated with all observations; this can be identified as the "restrictive model" because it imposes the restriction that all the 50+ parameters estimated are the same for nonprofit and for-profit centers. Next, the model was estimated separately for nonprofits and for-profits (by excluding the irrelevant variables from each equation). These two equations constitute the "unrestricted model" because the coefficients are allowed to vary between sectors. The hypothesis of no difference between the pooled (restricted) model and the unrestricted models could not be rejected at 5% significance, based on the Chow test. Thus, the test did not indicate that the two sectors produced quality in different ways (using different technology).

The failure to reject the null hypothesis of no difference between sectors for 50+ variables does not, of course, imply that all of those 50+ coefficients are equal to each other across sectors. To apply an alternative test of equality of specific variables, the model was re-estimated (with all observations), but including interaction terms between profit and the suspect variables. This assumes the same error covariance structure between sectors (the same assumption as in estimating the pooled model), but allows a limited set of coefficients to change.

The interaction terms were profit times the following variables:

staffing ratio
staffing ratio squared
percent of children subsidized
staff tenure
staff turnover
staff wages
before- and after-school program
bilingual program
Percent of staff with baccalaureate degree
administrator's tenure
administrator's involvement in curriculum

Among the suspect variables for which an interaction term was tested, none was significantly different from zero at 5%. The group of interaction terms as a whole was not significant either. Thus, although different variables showed up as significant in each sector when they were estimated separately, standard statistical tests were not able to identify the differences between the two sectors. At most, the results were ambiguous regarding the differences between the sectors in the production of quality. Further research is needed on the question of sector differences.

It should be noted that having the same production function, as shown by the insignificant differences between the two equations, does not rule out being in different places on that production function. The best for-profit centers might, for example, be substituting more training in the center and better staff ratios for the higher wages and qualifications of the staff in the best nonprofit centers. That trade could occur entirely within the same multi-dimension production function.

Comparison of the Econometric Model with the Hierarchical Regressions

The econometric results using the total sample are similar to those estimated in the hierarchical regression described above with some notable exceptions. In both models the following variables were significant and had the same, expected signs: adult-child ratio, percent of staff with bachelor's degree, administrator's experience, administrator's involvement in curriculum development, church affiliation, national system, and profit status/state. The coefficients on the poverty related variables of percent of staff nonwhite, proportion of children subsidized, and bilingual program were always negative and sometimes significant in both models, although the hierarchical regression incorporated the bilingual program into the program scope variable. In both models the following variables were not significant: group size, proportion infants, staff tenure, percent of staff with CDA or more ECE training, FTE enrollment, and numerous others.

A few variables produced different coefficients. Square feet per child was significant in the econometric model but not in the hierarchical model. Presence of a before and after school program was significant in the econometric model, but not in the hierarchical model.

The wage variable was significant in the hierarchical model. The wage rate of the staff with no college was significant in the econometric model, but the significance was weaker. The wage rates of those staff members with some college or a baccalaureate degree were not significant in the econometric model. This difference may have been due to the incorporation of the education mix of staff into the overall average wage rate in the hierarchical regressions and the separation of the education effect from the pure wage effect through the specification of the wage variables in the econometric model.

SUMMARY

- The analyses in this chapter consistently support previous findings that adult:child ratios and level of staff education (in this case the percentage of staff with at least a baccalaureate degree) are related to quality. The two regression analyses indicated that the adult-child ratio is the single most important factor in determining child care quality.

- These analyses also provide intriguing evidence that characteristics of the center administrator influence child care quality. In particular, the amount of the administrator's experience and her/his effective involvement with teachers in planning the children's curriculum are positively related to quality. The discriminant analysis indicated that the administrator's level of education discriminated among poor-, mediocre-, and good-quality centers.

- The results indicate that teacher turnover rates are negatively related to center process quality, although the effect is small and these results were more robust in the econometric than in the hierarchical regression estimations.

- Results provide further evidence that child care centers providing their teaching staff with higher wages also provide their children with higher quality care. The discriminant analysis indicated that mean teaching staff wage rates is the single most discriminating factor. Because of different approaches to entering wages into the multiple regression analyses, the hierarchical and econometric regressions yielded different wage effects. In the hierarchical regressions, holding all other factors constant, staff wages were significantly related to quality, whereas in the econometric model, which entered wages of staff by level of education, only the wage of staff with high school education or less was significantly related to quality.

- Significant, sector and auspice differences in quality were found in both regression analyses. Since the two analyses involved slightly different specifications of these dummy variables, results were not directly comparable. The most consistent results indicate that, holding all other factors constant, church-affiliated centers had lower quality than other centers in most states. For-profit centers which were part of national systems had relatively higher quality than other for-profit centers (again, holding other factors constant). State differences were significant when auspice was omitted from the hierarchical model, but for the most part, disappeared when auspice was included. Only the North Carolina for-profit centers were distinctively weaker when all other variables were accounted for.

- There was no significant difference in quality production functions between for-profits and nonprofits. However, there are enough hints of differences in coefficients and their significance levels that the comparison between sectors bears further investigation. The best of the for-profit centers might be substituting more training in the center and better staff ratios for the higher wages and qualifications of the staff in the best nonprofit centers.

- Finally, it should be noted that the regression analyses accounted for about half of the variance in quality among centers. While this is good for cross-section analysis, much of the difference in quality among centers was left unexplained. This suggests that there are many aspects of child care quality that still need to be explored in future research.

ENDNOTE

1. This represents 21 fewer observations than used in the hierarchical regression analysis. Ten observations were lost in the econometric analysis by the inclusion of the percent of nonwhite children.

Chapter 13 Appendix

Tables

Table 13.1 Correlations between Structural and Process Quality Measures by Profit Status and Total Sample

Table 13.2 Relating Process Quality to Structural Characteristics Hierarchical Regressions Including Linear and Nonlinear Relationships

Table 13.3 Discriminant Analysis: Process Quality Comparisons on Structural Quality Measures

Table 13.4 Quality Regression Data

Table 13.1 Correlations between Structural and Process Quality Measures by Profit Status and Total Sample

Teaching Staff Characteristics	Years of Education			Amount of Early Childhood Training		
	0-12	13-15	16+	CDA+	AA+	BA+
Total	-.32***	.01	.30***	.30***	.34***	.30***
Nonprofit	-.29***	-.03	.31***	.30***	.32***	.27***
Profit	-.33***	.04	.28***	.27***	.34***	.28***

	Years of Experience	Age	Tenure at Center	Ethncity (%Minority)	Staff(1) Wage
Total	.04	.07	.17*	-.16**	.33***
Nonprofit	.05	.05	.14*	-.08	.37***
Profit	.02	-.01	.11	-.31***	.20**

Classroom Structure			Space		
	Adult-Child Ratio	Class Size	Sq Ft/Child	Quality	Number of Volunteers
Total	.25***	.03	.04	.19***	.18***
Nonprofit	.22**	.01	.02	.03	.18*
Profit	.26***	.05	.01	.31***	.13

Center Structure	Program Scope	Hours Open	Center Age	Enrollment Size	%Infant Toddler
Total	-.14**	-.29***	.05	-.14**	-.11*
Nonprofit	-.17*	-.27***	.07	-.04	-.03
Profit	-.02	-.30***	-.07	-.16*	-.14*

	Center Turnover	School-age Program	% Subsidized Children
Total	-.17***	-.22***	-.03
Nonprofit	-.13	-.23**	-.01
Profit	-.16*	-.14*	-.29***

Director Characteristcs	Background					Administrative Effectiveness			
	Education	Age	Experience	Tenure	Wage(1)	Center Organ	Prof. Involv	Curric. Leader	Commun. Involv
Total	.20***	.04	.13***	.05	.04	.19***	.18***	.16***	.15***
Nonprofit	.19**	-.01	.14	-.02	-.01	.12	.16*	.19**	.15
Profit	.18*	.05	.10	.08	.05	.22**	.14*	.12	.15*

Costs and Fees	Labor Cost/ Child Hour(1)	Total Cost/ Child Hour(1)	Preschool Fees(1)
Total	.32***	.25***	.24***
Nonprofit	.32***	.25***	.20***
Profit	.25***	.22***	.33***

1: Measures of wages, costs, and fees are adjusted for state differences in cost of living

2: * p<.05; ** p < .01; ***p < .001

Table 13.2 Relating Process Quality to Structural Characteristics Hierarchical Regressions Including Linear and Nonlinear Relationships (n=352)

	Analysis Models - Standardized Regression Coefficients						
	State/ Profit 1	Human Capital 2	Wage- T. Staff 3	Class Struct 4	Center Struct 5	Admin. Char. 6	Auspice 7
R^2	.18	.26	.29	.35	.37	.40	.48
R^2 to add		.08***	.03***	.06***	.02	.03‡	.08***
State and Profit							
State(2)	***	***	*	ns	ns	ns	ns
Profit Status(3)	***	ns	ns	ns	ns	ns	
State*Profit(4)	**	***	***	***	***	**(NC:P>NP)	
Teaching Staff Characteristics							
Education.-. % BA/BS		.21***	.12*	.11‡	.09	.09	.09
Training- % CDA+		.10‡	.06	.07	.07	.06	.04
Age		-.04	-.02	.02	.02	.05	.03
Experience		.06	-.02	-.02	-.03	-.07	-.05
Tenure		.08	-.03	-.02	-.06	-.10	-.09
%Minority		-.14*	-.11‡	-.10‡	-.07	-.10‡	-.08
Teaching Staff Wages							
Wage			.72**	.79**	.71**	.62*	.76**
Wage squared			-.48‡	-.59*	-.54*	-.46‡	-.67*
Classroom Structure							
Adult-Child Ratio				.50***	.49***	.45***	.43***
Ratio squared				-.28**	-.28**	-.26*	-.23*
Class Size				.23‡	.21	.17	.20
Class Size squared				-.15	-.14	-.13	-.16
Space-Sq. Ft per Child				-.01	.01	.03	.05
Space Quality				.06	.07	.08	.03
Volunteer- (hours / FTE children)				.04	.05	.05	.03
Center Structure							
Program Scope					-.01	-.03	-.03
Hours Open					-.08	-.06	-.06
Enrollment Size					-.03	-.04	-.04
% Infant/Toddler					-.06	-.07	-.07
Center Age					.00	-.01	-.01
Teacher Turnover					-.09‡	-.11*	-.10‡
School-Age Program					-.07	-.05	-.05
% subsidized children					-.06	-.05	-.15‡

1: ‡p < .10; * p < .05; ** p < .01; *** p < .0001

2: ns (CA,CT>CO>NC)

3: (NP > P)

4: (NP > P in NC only)

Table 13.2 CONT.

	Analysis models -Standardized Regression Coefficients						
	State/ Profit 1	Human Capital 2	Wage- T. Staff 3	Class Struct 4	Center Struct 5	Admin. Char. 6	Auspice 7
R^2	.19	.30	.32	.39	.40	.43	.48
R^2 to add		.08***	.03***	.06***	.02	.03‡	.08***
Administrator Characteristics							
Education						.03	.02
Age						-.08	-.08
Tenure						.11‡	.15*
Prior Experience						.13*	.14*
Center Organization						.02	.02
ECE Professional Involvement						.04	.02
Curriculum Leadersip						.11*	.11*
Community Involvement						-.00	-.04
Auspice & Public Support							
Auspice							**(Church<Ind. NP, Nat. Chain)
State x Auspice							***(Loc. Chain: CT> Others)
Public Support							-.08
Public Regulation							.07

1: ‡p < .10; * p < .05; ** p < .01; *** p < .0001

Table 13.3 Discriminant Analysis: Process Quality Comparisons on Structural Quality Measures

		Quality					
		Poor (n=61)	Mediocre (n=212)	Good (n=79)	Weight	F (2,307)	Contrast
Teacher Characteristics							
% Teaching Staff -BA/BS	M (sd)	14% (17)	28% (22)	38% (28)	.53	17.1***	p<m<g
% Teaching Staff - CDA+	M (sd)	55% (31)	70% (25)	77% (22)	.44	11.8***	p<m<g
Wage(2)	M (sd)	$5.54 (1.16)	$6.76 (1.95)	$8.09 (2.30)	.67	28.2***	p<m<g
Classroom Structure							
Adult-Child Ratio	M (sd)	14 (.08)	.19 (.16)	.23 (.14)	.33	5.9**	p<m<g
Group Size	M (sd)	11.9 (5.9)	12.9 (7.8)	13.4 (7.3)	.10	0.6	
Number of Volunteer	M (sd)	.50 (1.37)	.67 (1.68)	2.03 (4.77)	.35	10.2***	p, m<g
Space-Inside Sq. Ft/Child	M (sd)	71.8 (46.0)	80.8 (71.6)	80.4 (53.8)	.09	0.8	
Center Structure							
Total Enrollment (FTE)	M (sd)	68.5 (44.5)	75.0 (50.5)	58.9 (42.4)	-.12	1.8	
% Subsidized Children	M (sd)	23% (25)	21% (31)	21% (32)	.00	0.1	
% Infants/Toddlers	M (sd)	28% (22)	21% (22)	15% (22)	-.35	6.9**	p, m>g
Teacher Turnover	M (sd)	56% (66)	31% (35)	24% (32)	-.38	9.3***	p>m, g
Before/After School Program	Prop	.82	.58	.49	-.37	16.2***	p>m, g
Center Age (years)	M (sd)	11.9 (9.4)	12.9 (9.7)	14.1 (15.2)	.17	1.5	
Hours of Operation	M (sd)	11.6 (.9)	11.2 (1.1)	10.7 (1.2)	-.41	10.2***	p, m>g
Public Fees(1)	Prop	.05	.04	.04	.01	0.1	
Public Regulation(1)	Prop	.02	.25	.11	.28	5.2	
OnSite Center(1)	Prop	.00	.04	.10	.29	8.9*	p, m<g
Independent For-Profit(1)	Prop	.44	.28	.28	-.18	6.4*	p>m, g

1: $\chi^2_{(1)}$ reported for categorical variables

2: Measures of wages, costs, and fees are adjusted for state differences in cost of living

3: * p<.05; ** p<.01; *** p <.001

Table 13.3 CONT. Discriminant Analysis: Process Quality Comparisons on Structural Quality Measures

		Quality					
		Poor (n=61)	Mediocre (n=212)	Good (n=79)	Weight	F (2,307)	Contrast
Local Chain(1)	Prop	.08	.07	.04	-.11	1.3	
National Chain(1)	Prop	.16	.13	.06	-.19	3.6	
Independent Nonprofit(1)	Prop	.11	.23	.32	.28	7.9*	p<m, g
Church Affiliated Nonprofit(1)	Prop	.20	.25	.12	-.12	5.0	
Public Center(1)	Prop	.00	.03	.16	.42	23.0***	p, m<g
Accreditation(1)	Prop	.00	.18	.10	.20	6.6*	p<g
Administrator							
Wage(2)	M (sd)	$2.12 (3.91)	$2.65 (4.81)	$2.14 (4.74)	.03	0.4	
Education (years)	M (sd)	15.0 (2.3)	15.7 (2.7)	16.4 (1.9)	.38	8.5***	p<m, g
Experience (years)	M (sd)	5.6 (6.4)	7.6 (6.52)	8.6 (6.5)	.29	4.5*	p<m, g
Tenure (years)	M (sd)	6.4 (6.5)	7.2 (6.4)	7.3 (5.8)	.12	1.1	
Curriculum Leadership	M (sd)	7.8 (4.3)	8.4 (4.0)	9.4 (3.5)	.29	4.5*	p, m<g
Community Involvement	M (sd)	4.8 (4.6)	6.5 (4.8)	7.2 (5.2)	.28	4.4*	p<m, g
Costs							
Labor Cost/Child Hr.(2)	M (sd)	$1.03 (.63)	$1.39 (.79)	$1.82 (.89)	.48	13.7***	p<m<g
Total Expended Cost/ Child Hr(2)	M (sd)	$1.59 (.78)	$2.00 (.91)	$2.41 (1.05)	.40	9.1***	p<m<g
Hourly Preschool Fee(2)	M (sd)	$1.60 (.51)	$2.02 (.73)	$2.37 (.83)	.46	12.4**	p<m<g
Maximum PS Fee(2)	M (sd)	$305 (93)	$364 (110)	$420 (124)	.44	11.2***	p<m<g

1: $\chi^2_{(1)}$ reported for categorical variables

2: Measures of wages, costs, and fees are adjusted for state differences in cost of living

3: * p<.05; ** p<.01; *** p <.001

Table 13.4

Quality Regression Data

	ALL CENTERS (N=331, R-square = 0.47)		FOR-PROFIT CENTERS (N=167, R-square = 0.55)		NONPROFIT CENTERS (N=164, R-square = 0.48)	
Variable	Coeff	t-Stat	Coeff	t-Stat	Coeff	t-Stat
Intercept	3.018339 ***	3.749	3.251109 *	2.441	2.739671 *	2.180
INPUTS						
Staff Child Ratio	2.355128 ***	3.445	4.948717 ***	3.845	1.241380	1.184
Staff Child Ratio Squared	-1.100065 *	-2.075	-4.486153 **	-3.062	-0.382713	-0.546
Group Size	0.022377	1.533	0.019565	0.988	0.042799	1.144
Group Size Squared	-0.000329	-1.266	-0.000207	-0.662	-0.001266	-1.238
Prop. of Teaching Staff with College Degree	0.434469 *	2.105	0.271833	0.962	0.760837 *	2.148
Prop. of Teaching Staff with at Least C.D.A.	0.251341	1.341	0.005408	0.021	0.521107	1.681
Age of Teaching Staff	0.003170	0.362	0.000477	0.032	0.011430	0.909
Experience of Teaching Staff	-0.015535	-0.732	-0.021354	-0.653	-0.012292	-0.401
Tenure of Teaching Staff	-0.017944	-0.724	-0.048623	-0.990	0.004257	0.134
Age of Administrators	-0.007934	-1.425	-0.012507	-1.437	-0.005747	-0.648
Experience of Administrators	0.013994	1.740	0.005817	0.448	0.019549	1.588
Tenure of Administrators	0.019991 *	2.050	0.041719 *	2.242	0.012454	0.918
Education of Administrators	0.012712	0.130	0.010793	0.082	-0.112060	-0.686
Administrator's Organization with Effectiveness	0.003144	0.287	0.002373	0.134	-0.002710	-0.178
Administrator's Professional Involvement	0.009065	0.893	0.001067	0.077	0.009153	0.555
Administrator's Curriculum Involvement Support	0.031617 *	2.800	0.025275	1.547	0.046767 **	2.660
Administrator's Community Involvement	-0.012764	-1.182	0.008148	0.495	-0.027878	-1.712
Square Feet per Child	0.002098 *	2.482	0.003529	1.853	0.001268	1.120
Volunteer Hours per FTE Child	0.002553	1.719	0.006114	1.228	0.001463	0.817
Wage for Teaching Staff with <= 12 yrs. Educ	0.107035 *	2.502	0.014677	0.201	0.153765 *	2.553
Turnover for Teachers/Teacher-Directors	-0.281088 **	-2.774	-0.398829 **	-2.421	-0.155485	-1.103
Training Costs per FTE Staff	-0.044757	-1.102	-0.080092	-1.376	-0.050949	-0.761
Age of Center	-0.001242	-0.286	-0.017719	-1.909	0.002778	0.493
CLIENTELE						
Percent of Children Subsidized	-0.381636	-1.676	-0.567819	-1.046	-0.423769	-1.530
Prop. Children Minority	-0.146859	-0.603	0.156922	0.428	-0.441241	-1.107
Prop. Staff Minority	-0.149167	-0.631	-0.431499	-1.280	0.257650	0.660
Bilingual Program	-0.310299 *	-2.256	-0.464610 *	-2.285	-0.351231	-1.488
SCOPE AND SCALE						
Fraction Infants	-0.244475	-0.793	-0.911395	-1.776	0.033482	0.076
Fraction Preschool	-0.120405	-0.468	-0.210248	-0.525	-0.283960	-0.746
Part-day Program	0.047384	0.376	0.080683	0.361	-0.072149	-0.394
Part-day Extended Care Program	-0.063312	-0.607	0.120093	0.673	-0.217250	-1.467
Head Start Program	0.545593	1.513	0		0.771587	1.886
Public School Sponsored Program	0.092517	0.491	0.261881	0.966	-0.086185	-0.267
Summer Camp Program	0.055296	0.523	0.007062	0.046	0.005095	0.031
Evening Care Program	-0.332349	-1.127	-0.201203	-0.498	0.047159	0.071
Weekend Care Program	0.088627	0.260	-0.200768	-0.434	-0.221020	-0.311
Sick Care Program	-0.498285	-1.343	-1.265770	-1.750	-0.013378	-0.025
24 Hour Care Program	0.512266	0.758	0.113231	0.105	0	
Before/After School Care Program	-0.256994 *	-2.198	-0.181887	-0.989	-0.172326	-0.956
Total FTE Children Enrolled	-0.000391	-0.355	-0.002268	-1.470	0.000486	0.248
Hours Open per Day	-0.009122	-0.180	0.003654	0.039	-0.055900	-0.704
OWNERSHIP AND LOCATION						
Public Auspice Dummy	0.197783	0.966	0		0.182833	0.777
Church Dummy	-0.399332 **	-2.974	0		-0.325061 *	-2.177
National Chain Dummy	0.382131	2.566	0.360271 *	2.083	0	
California Dummy	0.230313	1.191	0.644498 *	2.383	0.329923	1.360
Colorado Dummy	-0.145510	-0.780	0.233219	1.116	0.015618	0.073
Connecticut Dummy	-0.238540	-1.162	0.479126 *	1.982	-0.142630	-0.555
California For-profit Dummy	-0.427306 *	-2.273	0		0	
Colorado For-profit Dummy	-0.170622	-0.904	0		0	
Connecticut For-profit Dummy	0.132954	0.685	0		0	
North Carolina For-profit Dummy	-0.719351 ***	-3.616	0		0	
Publicly Supported Dummy	0.073002	0.373	0.410809	1.042	-0.076994	-0.311
Publicly Regulated Dummy	-0.002192	-0.045	0		0.033379	0.611

Chapter 14

Child Care Quality and Children's Developmental Outcomes

by ELLEN PEISNER-FEINBERG

OVERVIEW

The concurrent relationship between preschool children's cognitive and socio-emotional developmental outcomes and the quality of their child care setting was examined. The children were attending a subsample of the classes observed for collection of the quality data. The children were in their next-to-last year of preschool at the time of data collection, and were assessed during the same year in which the cost and quality information was gathered. In the conceptual model (Figure 2.1), these analyses are represented by the arrow from the Classroom Process Quality domain to the Children domain. In addition, the arrow from the Family domain to the Children domain, representing the simultaneous influences of families on children's outcomes, is accounted for in these analyses by controlling for the effects of maternal education as well as child characteristics of gender and ethnicity.

MEASURES

Child care quality was measured using the classroom process quality index, a composite variable based on observational ratings of various aspects of classroom quality. Because the data collection on children's developmental outcomes included only a subsample of the classes and centers in the cost and quality data collection, the classroom process quality index reported here only included scores from the preschool-age classrooms, and not the infant/toddler classrooms. Additionally, these classrooms had to be serving children who were in their next-to-last year of preschool (i.e., were eligible for kindergarten in the 1994-95 school year) at the time of the cost and quality data collection; classrooms which had only younger or older children were not included in this sample. (See Chapter 3 for further description of the sample.)

Developmental outcomes data were gathered from individual assessments of the children by trained assessors and from teacher ratings of the children. To summarize, the individual assessments included three summary measures of cognitive skills and one measure of attitudes and self-perceptions. Receptive language ability, or children's understanding of language, was measured using age-standardized scores from the *Peabody Picture Vocabulary Test-Revised*, PPVT-R, (Dunn & Dunn, 1981). Pre-reading skills were measured using the age-standardized score for the letter-word identification subtest of the *Woodcock Johnson Tests of Achievement-Revised*, WJ-R, (Woodcock & Johnson, 1989; 1990). Children's pre-math skills, such as simple counting and comparisons of different numbers of things, were measured using the age-standardized score for the applied problems subtest of the WJ-R. Children's attitudes toward child care and perceptions of their own competence were examined using the total score from the *Attitudes/Perceptions of Competence* scale (Stipek, 1993).

Based on teacher ratings, three factor scores of children's social skills were analyzed. A positive behavior factor, which rated children's creativity, independence, task orientation, and verbal intelligence was derived from the *Classroom Behavior Inventory*, CBI, (Schaefer, Edgerton, & Aaronson, 1978). A second CBI factor, sociability, was a rating of extroversion and general happiness or affect. The third CBI factor, problem behaviors, measured children's hostility, distractibility, and reversed scoring of considerateness.

Teachers also rated their relationship with each child using the *Student Teacher Relationship Scale*, STRS, (Pianta, 1992; Pianta & Steinberg, 1992), and two factors were derived from this measure. The STRS global positive factor measured the warmth of the teacher-child relationship and openness of communication between the teacher and child. The STRS global negative factor rated conflict/anger, dependency, and troubled feelings in the teacher-child relationship. (Further information about the scoring and factor analyses of all these variables is provided in Chapter 3.)

In addition, information on family and child characteristics was provided from the parent surveys. These variables included child gender, child ethnicity (African-American, Asian, Latino, White/non-Latino, and "Other"), and level of maternal education based on the highest degree or amount of schooling obtained. The figures for maternal education were converted to average number of years of education in the analyses. (See Table 3.5 for a description of the sample by reported level of maternal education.)

ANALYSIS PLAN

Hierarchical linear models were used to test whether each of the child outcomes was related to classroom process quality, while controlling for child and family characteristics, influences of state and sector, and systematic variation among children from the same center due to the shared child care experience. These models included the classroom process quality scores, maternal education, child ethnicity, child gender, state, and center sector as fixed-effect variables and child care center as a random-effect variable. Chapter 9 provides the descriptive analysis of this data set by sector and program scope.

Each outcome variable was tested separately. The initial model for each included all two-way interactions among the fixed-effect variables to determine whether the independent or conjoint effects of child and family factors, state-related influences, or center sector mitigated the association between developmental outcomes and child care quality. Child care quality was significantly related to maternal education, child ethnicity, state, and the interaction of state and sector in the present sample. Nonsignificant interaction terms were omitted one at a time to decrease the collinearity among the predictors. The State x Sector interaction was always maintained in the model regardless of its significance level because it represented part of the sampling frame. This process of reduction continued until the model included all main effects, the State x Sector interaction, and all other significant two-way interactions.

RESULTS

Tables 14.1 through 14.5 present the results of these analyses separately for each outcome measure. Unstandardized regression coefficients are listed for each term in the final reduced model for each outcome variable. Reference cell coding was used to determine the regression coefficients, and the reference cell for each variable is noted in the tables.

The significance of results pertaining to the relationship of child care quality to children's outcomes are discussed below. The relationships of state and sector to children's outcomes were discussed in the descriptive analyses presented in Chapter 9. Since the models presented below adjust for these influences as well as those of child and family characteristics and within-center dependencies, the findings on the relationship between classroom quality and children's outcomes have already taken into account any effects of these variables.

LANGUAGE ABILITY

The first analysis examined the relationship between children's receptive language ability and child care quality. The final model for this measure also included the Quality x Child Ethnicity interaction [F(4, 744)=3.58, p<.007]. As shown in Table 14.1, the results indicated that classroom process quality was positively related to PPVT-R scores. Pairwise comparisons of the means for the Quality x Ethnicity interaction indicate that the positive relationship between classroom quality and children's outcomes was stronger for African-American and "Other" minority children than for White/non-Latino or Asian children. This pattern of positive associations between quality of child care and verbal ability was observed even after adjusting for maternal education, gender, state, and profit status.

PRE-ACADEMIC SKILLS

The relationship between child care quality and assessments of children's pre-reading and pre-math skills was analyzed. No additional interaction terms were significant in the final models for either pre-reading or pre-math skills. Pre-math skills were significantly related to the index of child care quality, as shown in Table 14.2. This finding indicates that children in higher quality classes scored higher in pre-math skills, after controlling for maternal education, child ethnicity and gender, state, sector, and within-center effects. As also shown in Table 14.2, pre-reading skills were not significantly related to child care quality.

CHILDREN'S SELF-PERCEPTIONS

The final set of analyses of data from the individual assessments examined the relationship between child care quality and children's perceptions of their own competence and attitudes toward child care. As shown in Table 14.3, the reduced model maintained three additional interaction terms: Child Gender x Ethnicity, Quality x Maternal Education, and Quality x State.

A significant positive relationship with quality was found, after adjusting for maternal education, child ethnicity and gender, state, sector, and within-center effects, indicating that children in higher quality classes had more positive views of themselves and their child care experience. An inverse Quality x Maternal Education interaction was found [F(1, 736)=4.37, p<.04], suggesting that the positive effects of higher quality classrooms on children's self-perceptions were stronger for those who had relatively less educated mothers than those who had more highly educated mothers. Pairwise comparisons of the significant interaction of quality with state [F(3, 736)=3.35, p<.02] indicated that the influence of classroom quality on children's self-perceptions was stronger in California than in Colorado and North Carolina.

SOCIAL SKILLS

The fourth set of analyses looked at the relationship between teacher ratings of children's social skills and classroom quality. The three factors on the CBI, Positive Behaviors, Sociability, and Problem Behaviors, were analyzed separately. No additional interaction terms were significant in any of these models. Children's positive behaviors and sociability were significantly related to child care quality, after adjusting for maternal education, child ethnicity and gender, state, sector, and child care center (see Table 14.4). Children attending higher quality centers were rated as exhibiting more positive behaviors (e.g. creativity, independence, task orientation, and verbal intelligence) and as being more socially extroverted. In contrast, teacher ratings of problem behaviors were not related to child care quality.

TEACHER-CHILD RELATIONSHIP

A similar set of findings was discovered for the analyses examining the relationship between child care quality and teacher ratings of the teacher-child relationship, based on factor scores from the STRS (see Table 14.5). Teacher ratings of the teacher-child relationship were significantly related to child care quality for the global positive aspects of the relationship, but not for the global negative characteristics. Two additional interaction terms were significant in the model for the positive STRS factor: Child Gender x Ethnicity and Quality x State.

Even after adjusting for differences related to maternal education, child ethnicity and gender, state, sector, and child care center, teacher ratings of the positive aspects of their relationships with children were higher in classrooms of better quality than in classrooms with lower quality. In addition, pairwise comparisons of the significant interaction between state and child care quality [$F(3, 714)=2.58$, $p<.05$] indicated that the positive relationship between child care quality and positive aspects of the teacher-child relationship was stronger in California than in Colorado. There were no differences in teacher ratings of the negative aspects of teacher-child relationships based on the quality of the classroom.

CONCLUSIONS

A positive influence of child care quality was found across all areas of children's outcomes that were examined, including a number of aspects of both cognitive and socio-emotional development. This positive influence was found for measures from both sources of data, the individual assessments and the teacher ratings. The results indicated that children in better quality child care displayed more advanced language and pre-math skills, had more positive views of their child care situation and themselves, had better relationships with their teachers, and had more advanced social skills.

Children in higher quality classrooms displayed more advanced cognitive skills in individual assessments two areas: receptive language ability and pre-math skills. These children had a better understanding of language than children in lower quality classrooms. They also had better pre-math skills, abilities such as simple counting and comparisons among different numbers of things.

Children in higher quality classrooms also evidenced better socio-emotional development. They liked their child care centers better and rated themselves as more competent than children in lower quality care. Similarly, the teachers in higher quality classrooms viewed their relationships with the children more positively; they felt warmer toward the children, reported more open communication between themselves and the children, and saw the children's feelings and behaviors toward them as more positive. Teachers in higher quality classrooms also rated children's behaviors as more advanced than those in lower quality classrooms. Children in better quality classrooms were rated as more creative, more independent, more task-oriented, and higher in verbal intelligence. These children were also seen by their teachers as more extroverted or interested in interacting with other children and generally happier. There were no differences in teachers' ratings of children's problem behaviors or the negative aspects of teacher-child relationships according to the quality of the child care center.

This positive effect of better quality child care on children's cognitive and socio-emotional outcomes was found for boys and girls, for children from different ethnic backgrounds, and for children whose mothers had different levels of education. The significant relationships of child care quality to children's outcomes were found after accounting for the effects of these various child and family characteristics which relate to both selection of child care and children's outcomes. Relationships to the quality of child care were found across the whole variety of children's outcomes that were studied: language ability, pre-academic skills, attitudes toward child care and perceptions of competence, teacher-child relationships, and social skills. All of these are primary areas of development for preschool-age children, and furthermore, are considered important to children's ability to be ready to learn and to succeed in school. The strongest effect of child care quality was found for children's receptive language ability, and the next strongest for positive aspects of the teacher-child relationship. Children's skills in understanding language and the nature of their interactions with caregivers are key components relating to children's adjustment to school and early academic success (e.g. Alexander & Entwisle, 1988; Pianta & Steinberg, 1992).

The significant relationships between quality of care and children's outcomes are illustrated by examining the differences in mean scores for children in poor, mediocre, and developmentally appropriate classrooms as seen in Table 14.6. The scoring for both the language instrument and the measure of pre-academic skills is standardized, with norms at each age that include a mean of 100 and a standard deviation of 15. This means that for all children, an average score of 100 would be expected, and only about 16% would be expected to score more than 15 points lower, or below 85. The strongest effect was found for children's language abilities, and differences in these scores by quality of care are quite apparent. In our sample, children in care that is developmentally appropriate have an average score of around 100, at the expected average, while children in poor quality care are scoring around 86, or nearly one standard deviation below this. The differences in the pre-math scores for children in developmentally appropriate care compared to those in poor quality care are somewhat less than those for language, although still nearly half a standard deviation apart. The measures of children's attitudes and perceptions, the teacher-child relationship, and children's social skills were all scored on 1-5 scales, with 1 being low and 5 being high. The differences in scores between the highest and the lowest quality groups vary by nearly half a standard deviation on these measures as well, which is a meaningful difference.

While better quality care had a positive influence on cognitive and socio-emotional outcomes for all children, in two instances higher quality care had an even stronger positive influence for children typically considered at greater risk for school failure. Higher quality child care was even more strongly related to better language abilities for some groups of minority children. For children whose mothers had relatively less education, there was an even stronger relationship between being in higher quality care and having more positive attitudes about their child care and their own competence.

Further, some differences in the effects of quality were found by state, with stronger effects generally found for California than Colorado and North Carolina. This finding suggests that in states with a higher range of quality, the positive influence of better quality care on children's developmental outcomes is even stronger than in states with an overall lower level of quality.

Overall, a positive relationship was found between child care quality and children's outcomes for all children, with an even stronger positive effect for typically at-risk children in two cases. These findings are consistent with a number of earlier studies that revealed the positive effects of early intervention programs on development for at-risk children (e.g., Campbell & Ramey, 1994; Lazar et al., 1982; Schweinhart, Barnes, & Weikart, 1993; Wasik, Ramey, Bryant, & Sparling, 1990). The results are also consistent with studies that found positive relationships between developmental outcomes and child care quality (e.g., Bryant, Peisner-Feinberg, & Clifford, 1993; Goelman & Pence, 1987; Howes & Olenick, 1986; Howes, Phillips, & Whitebook, 1992; McCartney, 1984; Phillips, McCartney, & Scarr, 1987; Ruopp, Travers, Glantz, & Coelen, 1979; Vandell & Powers, 1983; Whitebook, Howes, & Phillips, 1989). Much of this previous research has focused primarily on children from at-risk backgrounds, or has included centers within only a limited range of child care quality.

There are several important features surrounding the sample of children and centers that distinguish the current study: 1) children from a broad range of family backgrounds were included; 2) the sample of child care centers represented the full range of quality; 3) the centers in the study were representative of typical community child care; and 4) child and family characteristics known to relate to selection of child care and to children's developmental outcomes were controlled for, so that the findings represented the relationship between care quality and child outcomes after taking these child and family characteristics into account.

Looked at as a composite, our results indicate that the quality of child care is related to children's developmental outcomes for children from all backgrounds and in child care centers across the range of quality. While a substantial body of research shows the positive impact of early care and education experiences on the development of more at-risk children, there has been an undocumented assumption that children from middle-class families were buffered from the negative impact of poor quality child care by the positive influences of the family. Contrary to this belief, this study found that, in most cases, the impact of quality was similar for children despite differences in maternal education, gender, ethnic background, state, or center sector. For two measures, children from what are typically considered at-risk backgrounds benefitted even more from higher quality care than children from more advantaged backgrounds. These results suggest that while in some cases the positive effects of higher quality care are even more crucial for children from backgrounds associated with being at greater risk for school failure, quality of care affects the developmental outcomes of all children. The significant contribution of the present study is this consistent finding of a positive relationship for a variety of measures and across a wide-ranging sample, which attests to the strength of the influence of child care quality on developmental outcomes for all children.

SUMMARY

- Children in better quality child care evidenced better cognitive and socio-emotional outcomes across the variety of domains studied: language ability, pre-academic skills, attitudes toward child care and perceptions of their own competence, relationships with teachers, and social skills. This positive relationship between the quality of child care and children's developmental outcomes was found after accounting for a number of child and family characteristics known to be related to both selection of child care and child outcomes.

- this positive effect of better quality child care on children's cognitive and socio-emotional outcomes was found for children from a variety of backgrounds, based on maternal education and child ethnicity and gender.

- The differences in children's developmental status by quality of child care were meaningful in a practical sense, with substantial differences in the scores (one-half to one standard deviation) for children in poor quality care compared to those in developmentally appropriate care. furthermore, all of the areas of development studied are relevant to children's adjustment to school and academic success, especially those showing the strongest differences (language ability and relationships with caregivers).

- In two instances, quality of child care had an even stronger influence for children typically considered at greater risk for school failure (i.e., language ability for some groups of minority children and views of their child care and themselves for children whose mothers had less education).

- In some cases, state-related characteristics mediated the influence of child care quality on children's outcomes, so that the impact of quality was stronger where quality was higher overall than where it was generally lower.

Chapter 14 Appendix

Tables

Table 14.1 Relationship between Receptive Language Ability (PPVT-R) and Child Care Quality

Table 14.2 Relationship between Pre-academic Skills (WJ-R) and Child Care Quality

Table 14.3 Relationship between Children's Attitudes/Perception of Competence and Child Care Quality

Table 14.4 Relationship between Social Skills (CBI) and Child Care Quality

Table 14.5 Relationship between Teacher-Child Relationship (STRS) and Child Care Quality

Table 14.6 Children's Developmental Outcomes by Quality of Child Care

Table 14.1

Relationship between Receptive Language Ability (PPVT-R) and Child Care Quality

n = 763

	REGRESSION COEFFICIENT	STANDARD ERROR
PROCESS QUALITY	4.38***	1.08
MATERNAL EDUCATION	1.38***	0.25
CHILD ETHNICITY[1]		
African-American	-30.83***	7.38
Asian	-3.84	12.83
Latino	-27.78**	10.27
Other	-32.04***	9.05
CHILD GENDER[2]		
Boys	-2.74**	1.04
STATE[3]		
CA	4.55	3.34
CO	10.56***	2.99
CT	10.45***	3.02
SECTOR[4]		
Non-Profit	-0.19	2.90
STATE x SECTOR[5]		
CA	-0.56	4.01
CO	-7.26	4.01
CT	1.57	4.04
QUALITY x ETHNICITY		
African-American	6.57***	1.74
Asian	-0.80	2.85
Latino	5.58*	2.67
White	8.29***	2.04
Other	2.27*	0.89
INTERCEPT	65.15***	4.77

Note: *p<.05
**p<.01
***p<.001

[1] Reference cell is White.
[2] Reference cell is Girls.
[3] Reference cell is North Carolina For-profit.
[4] Reference cell is North Carolina For-profit.
[5] Reference cell is North Carolina For-profit.

Table 14.2

Relationship between Pre-Academic Skills (WJ-R) and Child Care Quality

	PRE-READING SUBTEST *n* = 761		PRE-MATH SUBTEST *n* = 722	
	REGRESSION COEFFICIENT	STANDARD ERROR	REGRESSION COEFFICIENT	STANDARD ERROR
PROCESS QUALITY	0.78	0.58	1.16*	0.60
MATERNAL EDUCATION	1.01***	0.21	0.92***	0.21
CHILD ETHNICITY[1]				
African-American	-3.29*	1.35	-7.17***	1.40
Asian	5.79*	2.41	-7.10**	2.48
Latino	-7.32***	2.22	-9.40***	2.25
Other	-0.63	1.71	-1.79	1.74
CHILD GENDER[2]				
Boys	-2.44**	0.85	-2.50**	0.88
STATE[3]				
CA	9.34***	2.41	0.09	2.44
CO	4.71*	2.18	4.35*	2.21
CT	7.79***	2.19	10.15***	2.32
SECTOR[4]				
Non-Profit	0.75	2.10	-1.15	2.13
STATE x SECTOR[5]				
CA	-3.82	2.89	0.85	2.93
CO	-2.36	2.92	-3.45	3.00
CT	0.30	2.92	-0.93	3.11
INTERCEPT	79.08***	3.50	85.86***	3.60

Note: *p<.05
**p<.01
***p<.001

[1] Reference cell is White.
[2] Reference cell is Girls.
[3] Reference cell is North Carolina For-profit.
[4] Reference cell is North Carolina For-profit.
[5] Reference cell is North Carolina For-profit.

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Table 14.3

Relationship between Children's Attitudes/Perceptions of Competence and Child Care Quality

n = 759

	REGRESSION COEFFICIENT	STANDARD ERROR
PROCESS QUALITY	0.33*	0.16
MATERNAL EDUCATION	0.10	0.05
CHILD ETHNICITY[1]		
African-American	-0.47***	0.09
Asian	0.08	0.16
Latino	-0.53***	0.15
Other	-0.24*	0.12
CHILD GENDER[2]		
Boys	-0.12*	0.05
STATE[3]		
CA	-0.74*	0.32
CO	0.17	0.32
CT	-0.46	0.34
SECTOR[4]		
Non-Profit	0.13	0.12
STATE x SECTOR[5]		
CA	-0.05	0.16
CO	-0.25	0.16
CT	-0.20	0.16
GENDER x ETHNICITY[6]		
African-American	0.21	0.13
Asian	-0.43	0.24
Latino	0.34	0.21
Other	0.23	0.17
QUALITY x EDUCATION	-0.02*	0.01
QUALITY x STATE		
CA	0.43*	0.17
CO	0.25	0.17
CT	0.40*	0.18
NC	0.25	0.16
INTERCEPT	3.16***	0.69

Note: *p<.05
**p<.01
***p<.001

[1] Reference cell is White.
[2] Reference cell is Girls.
[3] Reference cell is North Carolina For-profit.
[4] Reference cell is North Carolina For-profit.
[5] Reference cell is North Carolina For-profit.
[6] Reference cell is White Girls.

Table 14.4

Relationship between Social Skills (CBI) and Child Care Quality

	POSITIVE BEHAVIOR FACTOR $n = 735$		SOCIABILITY FACTOR $n = 736$	
	REGRESSION COEFFICIENT	STANDARD ERROR	REGRESSION COEFFICIENT	STANDARD ERROR
PROCESS QUALITY	0.08*	0.04	0.07*	0.04
MATERNAL EDUCATION	0.04***	0.01	0.02	0.01
CHILD ETHNICITY[1]				
African-American	-0.28**	0.09	-0.07	0.09
Asian	-0.16	0.14	-0.09	0.14
Latino	-0.30*	0.13	-0.22	0.13
Other	0.07	0.10	-0.05	0.10
CHILD GENDER[2]				
Boys	-0.23***	0.05	-0.09	0.05
STATE[3]				
CA	-0.03	0.16	0.09	0.17
CO	-0.09	0.15	0.06	0.15
CT	-0.06	0.15	0.13	0.15
SECTOR[4]				
Non-Profit	-0.09	0.15	0.14	0.15
STATE x SECTOR[5]				
CA	0.09	0.20	-0.13	0.21
CO	0.15	0.20	-0.14	0.21
CT	0.01	0.20	-0.11	0.21
INTERCEPT	2.94***	0.22	3.41***	0.23

Table 14.4 continued

	PROBLEM BEHAVIOR FACTOR *n* = 735 REGRESSION COEFFICIENT	STANDARD ERROR
PROCESS QUALITY		
	0.02	0.04
MATERNAL EDUCATION		
	-0.05***	0.01
CHILD ETHNICITY[1]		
African-American		
Asian	0.11	0.10
Latino	-0.06	0.17
Other	0.02	0.16
	-0.20	0.12
CHILD GENDER[2]		
Boys		
	0.32***	0.06
STATE[3]		
CA		
CO	-0.30	0.18
CT	-0.09	0.16
	-0.11	0.16
SECTOR[4]		
Non-Profit		
	0.03	0.16
STATE x SECTOR[5]		
CA		
CO	0.17	0.21
CT	-0.02	0.22
	-0.24	0.22
INTERCEPT		
	3.07***	0.25

Note: *p<.05
**p<.01
***p<.001

[1] Reference cell is White.
[2] Reference cell is Girls.
[3] Reference cell is North Carolina For-profit.
[4] Reference cell is North Carolina For-profit.
[5] Reference cell is North Carolina For-profit.

Table 14.5

Relationship between Teacher-Child Relationship (STRS) and Child Care Quality

n = 763

	GLOBAL POSITIVE ASPECTS FACTOR *n* = 736		GLOBAL NEGATIVE ASPECTS FACTOR *n* = 736	
	REGRESSION COEFFICIENT	STANDARD ERROR	REGRESSION COEFFICIENT	STANDARD ERROR
PROCESS QUALITY	0.08*	0.04	0.01	0.04
MATERNAL EDUCATION	0.02*	0.01	-0.02	0.01
CHILD ETHNICITY[1]				
African-American	-0.25*	0.10	0.03	0.07
Asian	-0.05	0.15	-0.05	0.11
Latino	-0.32*	0.15	0.11	0.10
Other	-0.06	0.12	-0.01	0.08
CHILD GENDER[2]				
Boys	-0.23***	0.05	0.06	0.04
STATE[3]				
CA	-0.72	0.39	-0.29	0.16
CO	0.11	0.38	-0.13	0.14
CT	0.18	0.41	-0.12	0.15
SECTOR[4]				
Non-Profit	0.09	0.15	-0.03	0.14
STATE x SECTOR[5]				
CA	-0.12	0.20	0.20	0.20
CO	-0.10	0.19	0.13	0.19
CT	-0.23	0.20	-0.09	0.20
GENDER x ETHNICITY[6]				
African-American	0.29*	0.13		
Asian	-0.12	0.23		
Latino	0.47*	0.20		
Other	0.26	0.17		
QUALITY x STATE				
CA	0.21**	0.07		
CO	0.01	0.07		
CT	0.03	0.07		
NC	0.07	0.07		
INTERCEPT	3.72***	0.27	2.32***	0.19

Note: *p<.05
**p<.01
***p<.001

[1] Reference cell is White.
[2] Reference cell is Girls.
[3] Reference cell is North Carolina For-profit.
[4] Reference cell is North Carolina For-profit.
[5] Reference cell is North Carolina For-profit.
[6] Reference cell is White Girls.

Table 14.6

Children's Developmental Outcomes by Quality of Child Care

	QUALITY OF CHILD CARE			
CHILD OUTCOME	POOR	MEDIOCRE	DEVELOPMENTALLY APPROPRIATE	OVERALL
	n = 141-154	n = 385-416	n = 239-251	n = 768-821
RECEPTIVE LANGUAGE***	85.6 (19.2)	93.3 (17.4)	99.7 (17.4)	93.8 (18.4)
PRE-ACADEMIC SKILLS				
Pre-Math*	98.9 (14.1)	101.9 (13.2)	105.4 (13.4)	102.4 (13.6)
Pre-Reading	96.7 (15.0)	99.6 (12.2)	102.2 (12.8)	99.9 (13.1)
ATTITUDES/PERCEPTIONS*	4.2 (0.6)	4.4 (0.6)	4.4 (0.6)	4.3 (0.6)
TEACHER-CHILD RELATIONSHIP				
Positive Aspects*	4.0 (0.7)	4.1 (0.7)	4.3 (0.6)	4.2 (0.6)
Negative Aspects	2.1 (0.6)	2.1 (0.6)	2.0 (0.6)	2.1 (0.6)
SOCIAL SKILLS				
Positive Behavior*	3.5 (0.7)	3.6 (0.7)	3.8 (0.7)	3.6 (0.7)
Sociability*	3.8 (0.7)	4.0 (0.7)	4.1 (0.7)	4.0 (0.7)
Problem Behavior	2.6 (0.9)	2.4 (0.9)	2.4 (0.9)	2.4 (0.9)

Note: *p<.05
**p<.01
***p<.001

Chapter 15

Major Findings and Recommendations from the Study

by SHARON LYNN KAGAN, RICHARD M. CLIFFORD, SUZANNE W. HELBURN & THE RESEARCH TEAM

OVERVIEW

The Cost, Quality and Child Outcomes in Child Care Centers Study has collected comprehensive information on some 400 child care centers and over 800 children from a subset of those centers in four states. Previous chapters have described the study in detail and have presented the analyses. This chapter presents the big picture of the study findings. Whereas the introductions to Parts 2 and 3 and the chapter summaries provide a more detailed review, this chapter describes the overarching issues that emerged from the analysis of the data, focusing on those that are particularly important in understanding the environment in which child care is provided in center-based settings in this country. This chapter also presents the recommendations and action steps which flow from the project findings, recommen-dations that will help guide public policy making and practice in the field.

MAJOR FINDINGS

QUALITY

Based on criteria established by the early care and education (ECE) professional communities, *good-quality* child care is defined as that which is most likely to support children's positive development. To ascertain classroom quality, trained observers used instruments that permitted evaluation of the quality of the total child environment as well as more specific aspects of the relationship between teacher and child (see Chapter 6 for detail). An overall index of center quality was constructed, scaled from 1 to 7 with 1 as *inadequate* and 7 as *excellent* quality. Scores below 3 are referred to as *poor* or *less than minimal*; those that are at least 3 but less than 5 as *mediocre*; and those that are 5 as *good* and over 5 as *developmentally appropriate*.

> ▸ ***FINDING 1. Child care at most centers in the United States is poor to mediocre, with almost half of the infants and toddlers in rooms at less than minimal quality.***

The level of quality at most U.S. child care centers, especially in infant/toddler rooms, does not meet children's needs for health, safety, warm relationships, and learning. While there is a great deal of variation in the sample, the mean score for all centers in the study was 4.0, a full point below the good-quality level (5). Only one in seven centers (14%) received a rating of developmentally appropriate (5 or above), and one in eight (12%) were less than minimal (less than 3). Figures 15.1 through 15.3 show the distribution of the scaled quality index scores (Fig.15.1) and the global environment scores for preschool rooms (Fig.15.2 - ECERS scores) and infant/toddler rooms (Fig.15.3 - ITERS scores).

Child care for infants or toddlers is of particular concern. While infant/toddler teachers are at least as sensitive as - and spend more time being responsive than - preschool teachers, they are in settings that are less healthy and safe, and provide overall care that is less developmentally appropriate as shown in the global measures of quality of care. In fact, of the 225 infant or toddler rooms observed, only 1 in 12 (8%) were in the developmentally appropriate range, while 2 in 5 (40%) rated in the poor range. Babies in poor-quality rooms are vulnerable to more illness because basic sanitary conditions are not met for diapering and feeding; are endangered because of safety problems that exist in the room; miss warm, supportive relationships with adults; and lose out on learning because they lack the books and toys required for physical and intellectual growth.

While neither the National Child Care Staffing Study (Whitebook, Howes, & Phillips, 1990) nor the current study have truly nationally representative samples, there is some evidence that the quality of infant/toddler care has declined in the interval between the studies. Preschool quality seems to be virtually identical in the two samples.

> ▸ ***FINDING 2. Across all levels of maternal education and child gender and ethnicity, children's cognitive and social concurrent development are positively related to the quality of their child care experience.***

Children in higher quality preschool classrooms display greater receptive language ability and pre-mathematics skills, and have more advanced social skills than those in lower quality classrooms. Children in higher quality centers have more positive self-perceptions and attitudes toward their child care, and their teachers are more likely to have warm, open relationships with them. All of these factors are considered important to a child's capacity to enter school ready to learn. Further, these relations were obtained in analyses that controlled for child and parent characteristics known to be related to both child care selection and developmental outcomes, including maternal education and child gender and ethnicity.

While many previous research projects have studied the impact of child care on the development of at-risk children, this study focuses on the broad range of children in center care. For these children, developmental outcomes on a wide variety of measures improve with the quality of the center across all levels of maternal education and child characteristics. In some instances quality had even more impact on children typically considered at risk (specifically on receptive language ability of minority children and on the self-perception of children of less educated mothers).

Study investigators are currently following a subsample of children as they move into school to determine the impact of child care quality on changes in developmental status over time and to document the impact on school readiness and performance.

> ▸ ***FINDING 3. The quality of child care is primarily related to higher staff:child ratios, staff education, staff wages, administrators' experience and curriculum support, and teacher turnover. In addition, certain characteristics discriminate among poor, mediocre, and good-quality centers, the most important of which are teacher wages, education, and specialized training.***

This study affirms how important the ratio of adults to children is to quality of services. In the regression analyses to predict the determinants of quality, the staff:child ratio is the most significant determinant of quality, even when controlling for other factors affecting quality. Center quality also increases as the percentage of center staff with a baccalaureate degree increases. An increase in a center administrator's experience and his/her level of support in developing curriculum generate higher quality, all else being constant. Interestingly, quality, as measured in this study, was not related to size of the center.

Somewhat different results were obtained from the hierarchical regression and the econometric analyses with respect to the effects of wages and staff turnover. Both showed an independent positive effect of wages on quality, holding all other factors constant. In the hierarchical analysis, the average center wage of all teaching staff was found to be significant, while in the econometric analysis the average wage of staff with a high school degree or less was significant. The econometric analysis showed a significant relation between the annual turnover rate of teachers and teacher-directors, while in the hierarchical regressions teacher turnover was not quite significant at the 5% level.

Finally, it should be remembered that both regression analyses explained about half of the variance in quality. Although the fit of these data to the estimated models is quite satisfactory, it is nevertheless true that the models have left much unexplained.

A discriminant analysis identified classroom and center characteristics that distinguished among centers of poor, mediocre, and good quality. This analysis was particularly successful in identifying poor-quality centers, but only moderately helpful in discriminating between mediocre care and good-quality care. The most important discriminators were average teacher wage rates, and teaching staff education and specialized training.

Previous studies have found different measures of the quality of the workforce (general education or specialized training) to be a predictor of program quality. In this work, these two measures were highly correlated. Differing use of staff resources across sectors may confound the impact of education and specialized training, but it is clear that there is a strong relation between the education and training of the workforce and quality of services.

> ▸ ***FINDING 4. States with more demanding licensing standards have fewer poor-quality centers. Centers that comply with additional standards beyond those required for licensing provide higher quality services.***

More poor-quality centers were found in North Carolina than in the other three states, especially in the for-profit sector. Of the four states included in the study, North Carolina is the state with the least stringent child care standards. For example, at the time of data collection, North Carolina allowed 1 adult to every 6 infants or 15 three-year-olds, while the other states required 1 adult to every 4 or 5 infants or 10 or 12 three-year-olds. Similarly, North Carolina required far less early childhood education of its center staff than did the other three states.

In addition, centers that meet higher standards than required of all centers in their state in order to receive public funding pay higher wages, provide better benefits and working conditions and have higher overall quality. Finally, accredited centers, those that voluntarily meet a higher set of standards specified by an outside organization, have higher quality than do nonaccredited centers.

> ▸ ***FINDING 5. Three specific types of centers provide higher than average overall quality. A major characteristic these centers share is that they have access to extra resources that they use to improve quality.***

The 28 centers operated by a variety of public agencies (in public schools, state colleges, and universities, or operated by municipal agencies), the 16 worksite centers, and the 30 centers with public funding tied to higher standards (the same group cited in Finding 4) provide higher quality care than other centers. With a few exceptions they share the following characteristics: they have higher expended costs and total revenue per child hour, have more donated resources, and are less dependent on parent fees than other centers; they pay higher wages and provide more staff benefits; they have higher staff:child ratios; and teachers have more education, more specialized training, and longer tenure in the centers.

The econometric analysis shows that centers operated by public agencies (and nonprofit centers in general) use resources as efficiently as other centers. That is, for a particular level of quality, wage rates, full-time-equivalent (FTE) children, and size of facility, the cost per child hour is the same as at other centers.

These results suggest that quality is higher in centers that have in-kind donations or outside funding that they use to increase quality. While parent fees may represent a major source of revenue (for instance, in the worksite centers and centers operated by state colleges or universities), these centers do not have to depend solely on parent fees to finance the provision of quality services.

COSTS, REVENUES, AND SUBSIDIES

The following terminology is used in this report to discuss costs and revenues. *Expended cost* refers to cash costs that are actually incurred to run centers. *Donations* represent the dollar value of the goods and services that are donated by individuals and agencies to support child care. Those donations - facilities, volunteer services, or other kinds of goods or services - are included to report accurately all of the costs of providing care. *Foregone earnings* is the difference between a staff person's earnings in another occupation (based on the person's education, sex, age, and race) and the person's actual earnings as a child care worker. *Full cost* is the amount it would take to operate centers if all costs were included; it equals expended costs plus donations plus foregone wages. *Total revenue* is the total amount of income received by a center, including fees paid by parents, publicly reimbursed fees, USDA food grants, other public funds, sponsor and other private contributions, and other revenue.

> ▸ ***FINDING 6. Center child care, even mediocre-quality care, is costly to provide. Even so, donations and foregone wages are large, accounting for more than one-fourth of the full cost of care.***

The average *expended cost* or *cash cost* is $95 per week, or $2.11 per child hour, to provide mediocre care. In this labor-intensive industry, labor costs account for 70% of total expended costs. Facilities costs represent 16%, and all other cash expenses make up only 14% of the total. That expended costs are not even higher is due to the use of primarily female employees (97% were women in this sample) who earn even less in child care than they could in other female-dominated occupations. In this study, the mean foregone earnings given up by teachers was $5,238 per year; assistant teachers gave up $3,582 per year.

The mean *full cost* of producing center child care services is $2.83 per child hour ($127 per week), or $.72 per child hour more than expended costs. This additional cost comes from workers who contribute 19% of full costs ($.54 per child hour) in foregone wages and benefits; occupancy donations, which average about 5% of full cost ($.14 per child hour); and volunteer services and donated goods, which represent 2% of full costs ($.06 per child hour). These donations and foregone earnings make up over 25% of the full cost of child care.

The amounts of foregone earnings and in-kind donations vary by state. When foregone earnings are adjusted for regional differences in the cost of living, they are smaller where overall quality is higher, and larger where overall quality is lower. This suggests that child care staff are being paid closer to the market value of their human capital attributes in the states with higher quality.

A comparison of the expended cost of child care with a typical family's income indicates the high cost of producing even mediocre-quality care. The average annual expended cost paid by a center to provide services for one child is $4940 per year. In 1993 in the U.S., this represented 8% of the median dual-earner family before-tax income of $60,000, and 23% of the median before-tax income of $21,000 for families headed by a single parent (*Statistical Abstract of the U.S. 1994*, pages 429 and 474). The full cost of care represents 11% and 31%, respectively, of these incomes.

▸ *FINDING 7. Good-quality services cost more, but not a lot more.*

The cost functions revealed that the cost of providing care is modestly and positively related to the level of quality of services. The additional cost to produce good-quality services (index = 5) compared to mediocre-quality care (index = 4) was about 10% more than child care cost at centers of average quality. The cost of increasing quality increases, however, at higher levels of quality.

Results of this study indicate that centers providing good-quality services have the resources to provide quality, but on average they do not spend a lot more per child hour than centers providing mediocre quality. Commitment to providing good-quality care, backed up by the ability to create a nurturing learning environment, appears to be crucial in the provision of good-quality care. At this stage of development of the child care market, where altruistic values motivate directors and staff at some centers, higher quality is not necessarily associated with much higher cost. Nevertheless, better quality care is more costly. For instance, Finding 5 above indicates that centers with access to more financial resources tend to use these resources to provide higher quality. Furthermore, good-quality centers pay higher wages and have more sources of revenue and support.

This 10% estimate is based on cross-sectional data and cannot, therefore, be used to project the quality change from increasing industry-wide expenditures. For a 10% increase in cost to significantly improve quality, the money would have to be spent wisely and not cause any increase in the prices of resources used.

▸ *FINDING 8. There are economies of scale in providing child care.*

Economies of scale exist in child care, which show up in two ways. First, the larger the number of children served (up to the legal capacity of the center) and/or the longer the hours of service, the lower the cost per child hour for a particular level of quality. That is, using the same facility space, serving more children or serving them more hours brings about a proportionately smaller increase in cost per child hour. Second, larger centers, those designed to serve a larger number of FTE children, also have lower average total expended costs per child hour than centers designed to serve a smaller number of children, even holding quality constant. Since size of center is not related to quality of services (see Finding 3 above), the ability to take advantage of scale economies can be a strategy for improving quality, given that staff:child ratios and levels of teacher education are maintained.

▸ *FINDING 9. Cash payment from government and philanthropies represent 28% of center revenue and demonstrate a social commitment to share the expenses of child care*

To some extent, center child care is considered both a merit and a collective good. It is a merit good to the extent that it is considered an important service that some children need regardless of their family's ability or willingness to pay. It is a collective good to the extent that we recognize the collective benefit received by the society from providing child care to some children. That such views exist is demonstrated by philanthropic contributions, public funding of centers, and child care tax credits which help reduce the fees paid by parents and other purchasers of child care.

For the whole sample, including families whose child care is subsidized, parent payments to centers represent the equivalent of $1.55 per child hour or $70 per week. This represents 71% of center revenue (and 55% of full cost). For families that pay full tuition, preschool tuition averages $1.92 per child hour or $86 per week. If the typical family elects to take the federal child care tax credit available to them, this represents another government contribution, reducing parent expense by an estimated average of $.21 per child hour (20%

of $200 per month/193 hours per month) or by $40 per month.

SECTOR DIFFERENCES

Child care centers operate in a mixed market made up of private nonprofit centers, nonprofit publicly operated centers, and centers owned and operated for profit. The fact that different kinds of financial structures co-exist and compete in local markets can affect the cost and quality of services.

> ▸ ***FINDING 10. There are differences between for-profit and nonprofit sectors. Overall quality of services, however, is not significantly different between the two sectors except in the one state with very lax licensing standards.***

Quality is not significantly different between for-profit and nonprofit centers except in North Carolina, where for-profit centers provide much lower quality care. In addition, the econometric analysis indicates that there is no significant difference in variable costs per child hour between the two sectors, holding constant the number of hours of service, quality, wage rates paid, and size of facility. This means that the nonprofit sector is about as efficient in the use of resources as the for-profit sector.

Despite overall similarities, there are also differences. In nonprofit centers staff:child ratios in preschool rooms are higher than those in for-profit centers; teachers and teacher-directors have more specialized training and formal education; assistant teachers and teacher directors have more prior experience; staff have worked more months at the center; and annual turnover rates are lower. Nonprofit centers pay higher wages, and the foregone earnings of their staff are lower than those in for-profit centers.

With respect to these sector comparisons, it should be noted that the analysis of quality, which points to the importance of staffing ratios and teacher qualifications, nevertheless accounts for only half of the variance in quality levels in the sample. The missing factors must help explain this apparent anomaly.

> ▸ ***FINDING 11. Within each sector, particularly the nonprofit sector, there is variation by subsectors in center characteristics and quality.***

To examine differences *within* each sector the nonprofits were divided into three subsectors (1) independent nonprofit, (2) church-affiliated nonprofit, and (3) publicly operated nonprofit. The for-profits were also divided into three subsectors (1) independent for-profits, (2) local chains, (3) and national systems.

Within the for-profit sector, there is considerable homogeneity among the three subsectors with regard to staffing ratios and staff quality. In addition, the different subsectors do not significantly differ in their costs, revenues, wages, and overall quality of services. National systems do, however, offer more staff benefits such as health insurance, maternity leave, and staff child care discounts. Centers that are part of national and local systems serve significantly more children then do independent nonprofits, and centers in national systems have a larger percent of vacancies.

Nonprofits are less homogeneous; indeed, there are important differences among subsectors. Centers operated by public agencies have higher costs, revenues, and quality than other nonprofit centers. Church-affiliated centers have lower staff:child ratios, lower levels of trained and educated staff, lower wages, lower cost and revenues per child hour, and lower overall quality than other nonprofits, even when other factors affecting quality are held constant. These centers seem to resemble for-profit centers more closely than other centers in the nonprofit sector.

These findings dispel the notion that quality (or lack thereof) is crisply aligned with a particular sector. To the contrary, these findings suggest that it is difficult to associate any given level of quality with a sector overall; rather, levels of quality may be more clearly aligned with subsectors. Profit status does not seem to distinguish between quality of services as much as the extent to which centers receive significant sources of revenue other than parent fees. For-profit and church-affiliated centers have in common their dependence on parent fees as their major source of revenue.

THE ECONOMIC ENVIRONMENT

A unique focus of this study was to learn more about the effects of market conditions on the cost and quality of care. For instance, differences in short-run demand and supply conditions faced by for-profit and nonprofit sectors or subsectors may affect the cost and quality of care provided in the market.

> ▸ ***FINDING 12. Characteristics of the market setting for child care - notably, market competition and subsidy dependence - affect center finances. For-profit and nonprofit centers face different competitive conditions that can affect their performance.***

This study indicates that child care markets appear to be highly competitive. First, centers in for-profit and nonprofit sectors charge similar fees per child hour. Second, both sectors seem to minimize costs. Third, both sectors earn similar low rates of profit (surplus) on sales (less than 4%).

Despite evidence of a high degree of competition between sectors, the composition of costs and the ability to take advantage of scale economies is different. For-profit centers spend a higher percentage of total costs on facilities and a smaller percent on labor, which could lower quality. These centers, however, typically serve a larger number of children and/or provide more hours of service than do nonprofit centers. That allows for-profit centers to operate at lower average cost per child and enables them to compete successfully with their nonprofit counterparts at a given level of quality. Nonprofit centers, many of which depend on donated facilities, may not have the option of increasing their size to take advantage of economies of scale. Offsetting the economies of scale advantage of the for-profits, is the donations advantage of the nonprofits. This reduces nonprofit facilities costs and allows the nonprofit centers to spend more on labor within a similar cost per child hour.

> ▸ ***FINDING 13. There is evidence of inadequate consumer information, which creates market imperfections and reduces incentives for some centers to provide good-quality care.***

This study suggests some reasons for the prevalence of low-quality child care, particularly for centers dependent on parent fees. In the study, while parents report they value the characteristics of good-quality child care, they substantially overestimate the quality of services their children are receiving. Ninety percent of parents rated the programs in which their children were enrolled as very good, while the ratings of trained observers indicate that most of these same programs were providing care that ranges from poor to mediocre.

There are numerous possible explanations for this discrepancy between parent and observer ratings, some of which were investigated. For instance, there is evidence that parents are hindered in assessing care by the inherent difficulty of monitoring service. The disparity between the scores given by parents and the observers' assessments of quality is higher for aspects of care that are difficult for parents to observe. Also, parents' priorities seem to affect their assessments. The more they value an aspect of care, the greater the disparity between their evaluation and that of the trained observer. There may be other reasons why parents rate their child care arrangement highly. For instance they may not feel that they have a choice of care, or they may never have observed good-quality care, giving them no basis of comparison.

The apparent inability of parents to recognize good-quality care implies that they do not demand it. There is little difference in fees between poor-quality and high-quality centers, with the possible exception of California, which lends credence to this hypothesis. Equally important, under these conditions, given both a competitive market that equalizes fees across centers and parents' difficulty in identifying center quality, centers dependent on parent revenues have no incentive to provide a higher level of quality at higher cost.

The findings do suggest that centers are providing the services parents demand so they can go to work. Preschool classrooms meet health and safety needs. Centers in the sample are open long hours, 10 to 12 hours per day. They provide part-time care, before-school and after-school programs, and summer camps. Parents, however, while they value good-quality services, apparently are not demanding quality. To the extent that government agencies involved in purchasing care for low-income children impose low payments for services through funding caps and insufficient reimbursement rates, they too contribute to lowering the demand for good-quality child care.

SUMMARY AND IMPLICATIONS

Good-quality child care matters to children's cognitive and socio-emotional development. Despite the importance of good-quality child care, only one in seven centers provides a level of child care quality that promotes healthy development and learning. These findings confirm earlier reports about the quality of child care available to the average family in the United States, presented in the National Child Care Staffing Study (Whitebook, Howes, & Phillips, 1989) and the Study of Children in Family and Relative Care (Galinsky, Howes, Kontos, & Shinn, 1994). Results from the current study indicate that care for infants and toddlers may be even lower quality than previously thought.

This does not mean that good-quality care does not exist or that the early childhood profession does not know how to provide it. First, we know that high staff:child ratios, more highly educated staff, administrators with more experience providing more curriculum leadership, and staff stability at the center together do much to create good-quality services.

Second, this study confirms that weak licensing standards are linked to lower quality services, with for-profit centers and church-affiliated centers being particularly affected by weak standards. Conversely, accredited centers have higher quality. It appears that publicly operated centers, worksite centers, and centers that conform to higher standards in order to receive public funding have higher quality; those centers seem to have additional sources of revenue or support such as sizeable donations or cash contributions, which they use to raise quality. Moreover, we have seen that taking advantage of economies of scale can reduce costs, thus permitting an increase in quality.

Third, lower quality centers pay lower wages. We also found that wages of women working in child care are low, even compared to women's wages that already are lower than men's wages. Foregone earnings are lower in publicly operated and worksite centers where quality is higher. Foregone earnings and staff turnover rates were highest in Colorado, so that there is reason to believe that higher foregone earnings reduce staff job satisfaction and increase turnover.

Finally, market characteristics and imperfections affect the cost and provisjon of quality. Efficient markets require that buyers have full information. Until parents and other purchasers of care can easily distinguish good from mediocre and poor-quality centers, and demand higher quality, centers cannot increase their fees to cover the increased costs of providing better care. Since, in this study the fee differential between centers offering mediocre and good quality services was smaller than the cost differential, most centers cannot afford to provide better quality, given the existing fee structure.

RECOMMENDATIONS FOR ACTION

In this nation, there is a commitment that by year 2000, children will enter school ready to learn. Yet despite this intent, the reality of child care in the United States today makes it unlikely that we will reach that goal. Unless poor-quality child care is curtailed, the development and well-being of large numbers of our nation's children may be jeopardized. To that end, we make only one recommendation based on the following assumptions:

- Child care participation will remain totally voluntary; that is, parents will have the right and responsibility to choose whether or not they use child care
- Parents' right to choose child care will be preserved; that is, parents will have the right and responsibility to select the type of child care they wish;
- Child care will remain a mixed sector industry; that is, centers will continue to operate in the profit, nonprofit, and public sectors;
- As a merit good, a service we as a society want to provide for all children, the financing of quality child care will continue to be shared by responsible parties; that is, to the extent feasible, families will help pay for child care, as will responsible employers, philanthropic organizations, and the government.

THE NATION MUST COMMIT TO IMPROVING THE QUALITY OF CHILD CARE SERVICES AND TO ENSURING THAT ALL CHILDREN AND THEIR FAMILIES HAVE ACCESS TO GOOD PROGRAMS. THAT IS, GOOD-QUALITY CHILD CARE MUST BECOME A MERIT GOOD IN THE UNITED STATES.

Earlier in this report (chapter 2 and Finding 9 above), child care services were described as a merit good, by which we meant that many groups in society value the service enough (like other merit goods) to think it needs to be supplied to individuals and families in larger quantities than would be supported by private demand. Inherent in the definition of a merit good is an understanding that altruistic citizens - and possibly the public at large - value the service enough to make it available to families who will not, or who cannot, purchase it on their own.

There are difficulties with characterizing *good-quality* child care as a merit good. First, it does not now represent reality; our society does not appear to value quality in child care. Further, it could be construed to infer that as a merit good, all child care in the United States should become the purview of the government. Discussing these caveats is essential to clarifying both our construct of merit good and the recommendation we make.

First, while many may ideally wish to regard good-quality child care as a merit good, the hard reality is that child care in the United States is more akin to the service of last resort, at both individual familial and institutional policy levels. For families, child care is the last resort because it cannot be chosen for the benefits that will accrue to children as a result of their participation (though clearly parents hope this will be the case). It is chosen because it is a service that enables parents to meet their primary mission of gainful employment. Similarly, at the institutional policy level, public child care has historically been an enabling service - for instance, it enabled Rosie to rivet during World War II. Child care, then, is not currently seen as a merit or altruistic good, delivered for its inherent value or contributions to children. It is not and never has been an altruistic national goal; it is and always has been a means to supporting workers (or future workers) through greater social or personal crises.

Illustrative of this point is current child care related public policy, much of which seems designed to produce mediocrity. Federal tax credits are limited to the first $200 per month of care, a figure that would, at most, cover minimal quality. Credits for costs of providing higher quality do not exist. Federal rules for reimbursement of child care cost based on 75% of market prices of child care reflect a concern for cost, not quality. Lack of differential reimbursement incentives for developmentally appropriate quality, or even monitoring thereof, implies that quality does not matter. Wage levels that push workers out of the industry in search of higher incomes suggest little regard for the skills that produce higher quality care.

It is not sufficient to have *any* child care as a merit good; it must be *good-quality* child care. We say this because the level of quality matters for young children. To advocate for any child care as a merit good would belie the very intent of merit good. A merit good must, indeed, be of *merit*; anything less than good-quality developmentally appropriate care - because of its deleterious effect - cannot be even casually deemed of merit. Consequently, we call for good-quality child care as a merit good.

Second, while discussions of merit goods may become confounded with public or collective goods, we distinguish between these terms, suggesting that good-quality child care be recognized primarily as a merit, not a collective good. We do so because suggesting that good-quality child care be recognized as a collective or public good could be interpreted to infer that we are suggesting full public support for this public good. We are not. We suggest that good-quality child care be regarded as a merit good that exists in, is financed from, and retains multiple supports.

Recommending that good-quality child care be regarded and supported as a merit good means that child care must be recognized not as a means but as a legitimate end, in and of itself. In this schema the nation provides good-quality child care because it is good for children. In contrast to current thinking which justifies child care as a service to parents, thereby tacitly sanctioning mediocrity for children, the concept of a merit good places children and their developmental needs front and center, with no equivocation. A dramatic departure from what exists, this recommendation is fundamental to reforming the raison d'etre for American child care. By conceptualizing quality child care as a merit good, we shift the debate from providing mediocre services that suffice while parents work to providing quality services that enrich our children and thereby our nation.

It is important to recognize that child care reform will not take place immediately; it will not take place without concerted effort across the sectors; and it will not take place in a tidy, linear fashion. Here are the near-term action steps that are necessary correlates of the major Study recommendation. These action steps are not presented in order of importance or order of attention needed.

ACTION STEP 1

> ***Launch consumer and education efforts in the public and private sectors to help parents identify high-quality child care programs and to inform the American public of the liability of poor-quality programs.***

- Give parents clear information regarding the observable ingredients of good-quality child care.
- Give parents and others information that clearly identifies good-quality programs.
- Initiate a long-term public media campaign analogous to the one addressing the impact of smoking on health, to raise public awareness of the nature and importance of good-quality child care.
- Initiate, in collaboration with other private and public agencies, a federally supported program of research to increase under-standing of the child care market and to provide an ongoing data base on the status of child care in the United States.

ACTION STEP 2

Implement higher standards for child care at the state level, as a major approach to eliminating poor-quality child care.

- Create higher standards at the state level and improve monitoring of child care as a part of consumer protection. Standards must do more than protect the basic health and safety of children - they must also take into account children's developmental needs.

- Eliminate all exemptions from state licensing standards.

- Encourage centers to seek and maintain voluntary professional center accreditation based on high standards.

- Give state and federal financial incentives for centers to provide care that meets higher standards, eliminating federal regulations that restrict the ability of states to pay higher prices for higher quality care.

- Develop methods for providing special incentives for the for-profit and church-affiliated centers to encourage higher quality in these sectors of the market.

- Focus higher standards on those areas which are shown to be related to higher quality care - staff:child ratios, teacher education and specialized training, and administrator experience.

ACTION STEP 3

Assure adequate financing and support of child care.

- Increase investment in child care by federal, state, and local government as well as the private sector, to help families pay the cost of care.

- Tie all federal and state child care funding to standards that demonstrably produce high-quality care.

- Provide financial incentives that enable centers to hire experienced directors and skilled staff and to learn how to keep them.
- Tailor employee benefits to provide significant help to employees with young children, as part of the private sector's support of child care.

ACTION STEP 4

Increase investments in child care staff to assure a skilled and stable workforce.

- Invest more federal, state, and local government funds and private sector funds in the education and training of child care workers and administrators.

- Provide all child care workers compensation appropriate to their training, experience, and responsibility.

Chapter 15 Appendix

Figures

Figure 15.1 Process Quality in Child Care Centers

Figure 15.2 Process Quality in Child Care Centers: Infant/Toddlers Classrooms

Figure 15.3 Process Quality in Child Care Centers: Preschool Classrooms

Figure 15.1 Process Quality in Child Care Centers

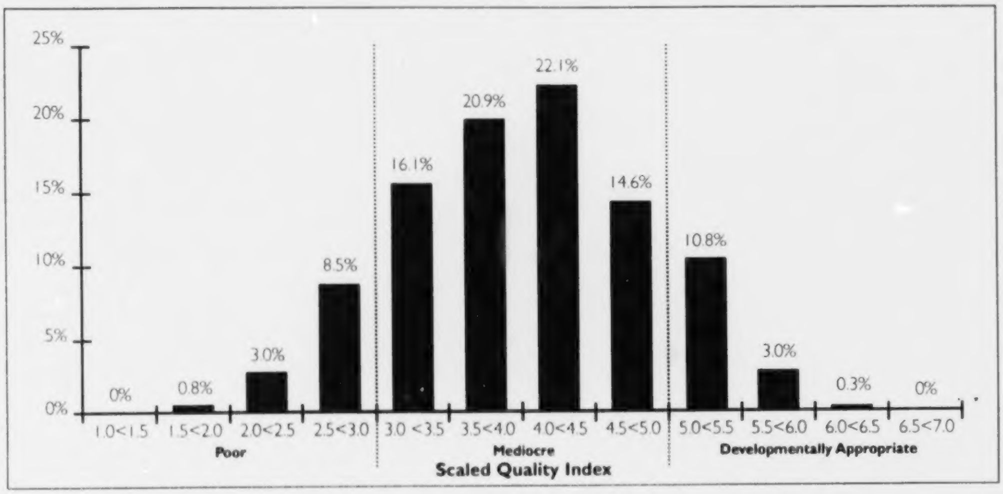


Figure 15.2 Process Quality in Child Care Centers: Infant/Toddler Classrooms

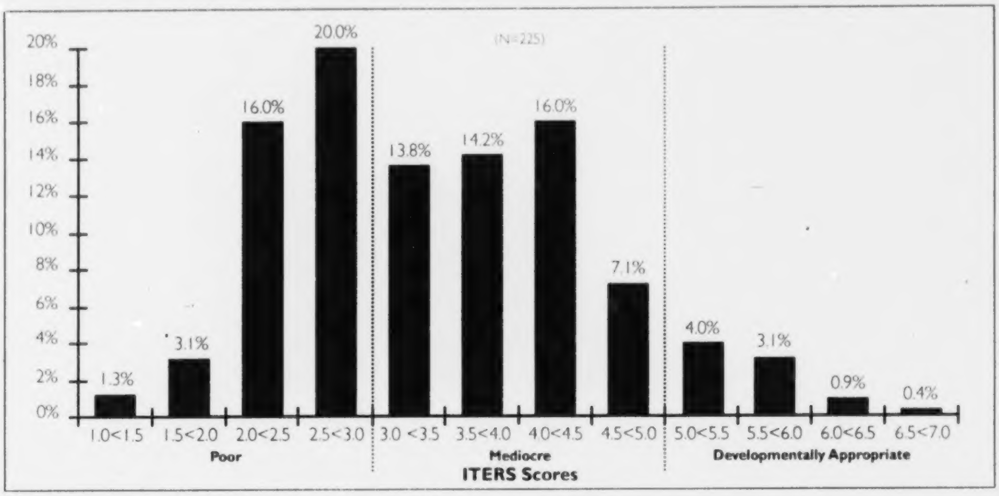
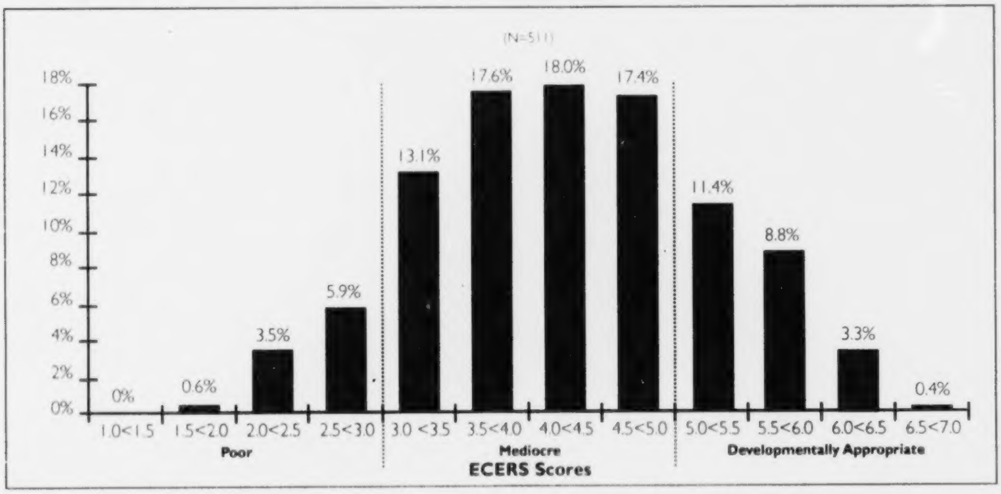


Figure 15.3 Process Quality in Child Care Centers: Preschool Classrooms



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Glossary

AFDC JOBS Programs - were mandated in The Family Support Act of 1988 welfare reform legislation. They are state-level initiatives to move mothers receiving Aid for Families with Dependent Children (AFDC) into paid work through provision of training programs, special counseling, and child care benefits.

Agency problem - a type of market imperfection which may arise when a second party, the *agent*, acts on behalf of another person, the *principal*, in market transactions or other forms of economic exchange. An agency problem arises when the agent does not act in the best interests of his/her principal. In such situations the market exchange, or purchase, does not reflect what would be in the best interests of the principal. In child care there are two kinds of agency and each can involve an agency problem. First, when parents purchase services for their children, they are their children's agent, acting on their behalf. Second, in purchasing child care from a center, the parents enter into a contractual arrangement with the center which then becomes the agent for the parents in providing services for their children. In either case, it is possible that the agent will not properly represent the principal (that is, the child or the parents), and this can create market imperfections. To overcome agency problems, it is necessary to establish incentives which induce the agent to act in the principal's best interest. Ordinarily, agency problems refer to explicit contractual relationships; we are extending the concept to also include the implicit contract between parent and child.

Allen elasticity of substitution - measure the effect on relative factor inputs of a change in the relative factor prices, holding output and other factor prices constant. Differs from conventional elasticity of substitution by holding output constant.

Asymmetric information - is a situation in which the buyers are less well informed about the quality of the services than the sellers of the services.

Auspice - is the term we use to designate the subsectors within the nonprofit and for-profit sectors. For instance, independent nonprofit, church-affiliated nonprofit, and publicly operated centers are the three auspice categories included in the nonprofit sector.

Barriers to entry - are anything that prevents new firms from entering and industry. Typically they include high capital requirements, licensing, marketing difficulties, among others.

Child outcomes - refers to the observable levels of cognitive and social functioning of the children as well as outcomes related to the children's success in school, the potential long run effect on the children's success as adults.

Compensating wage differential - is a discount on wages that some workers are willing to accept because they prefer work in early care and education over better paying alternatives. The concept originated in the wage premium demanded in dangerous or unpleasant jobs like radioactive waste clean-up or garbage collection.

Classroom structure - refers to aspects of childcare programs that are generally amenable to regulation because they are relatively easy to observe and measure. These aspects are some of the inputs in this study's production function for quality child care. Variables include adult-child ratio, group size, teacher education, specialized training, prior experience, and tenure in the center.

Collective goods - are goods or services the consumption of which benefits individuals other than the direct consumers. Immunization shots are a good example. Immunizing poor people from contagious diseases benefits the poor individual but also the society as a whole in cutting down on the probability of an epidemic. Sometimes the term *public good* is used synonymously with *collective good*. We try to avoid using *public good* because in economics it is used to describe a specific type of collective good.

Commodification - is part of the process of economic development in a market economy in which goods and services that were traditionally produced, for instance, at home or on a subsistence farm for family consumption begin to be produced for exchange and profit. It is a process by which home and other nonmarket production is replaced by market provision. Child rearing is one of the many kinds of home provision for one's own family that in this century has been increasingly supplanted by market provision.

Cost function - is derived from a production function for ECE services. It gives the total cost of producing different levels of output using the technology embodied in the corresponding production function, assuming the firm minimizes costs.

Crowding - is the idea that most women work in a limited number of occupations, creating and excess supply of labor for those jobs and depressing the wage rate in them.

Demand conditions - are factors which influence how much of a good or service a person would be willing to purchase at a given price. In child care, demand conditions influence parents' decisions about how much and what quality of service to purchase at a given fee. Demand conditions include family income and purchasing power, location convenience of the center, parents' knowledge of the options for care and of the characteristics of good quality services provided, the reliability and trustworthiness of providers, the costs involved in gaining knowledge about the existence and quality of child care services, and parents' values and preferences.

Demand subsidies - are revenues available to centers to allow individual children who could not otherwise afford child care services to do so.

Developmental outcomes - refers to children's developmental levels based on measures of their cognitive and socio-emotional functioning outcomes. Oover the long term, these relate to children's success in school.

Discriminant analysis - is a statistical technique to develop a combination of factors that predicts (in this study) the quality level of a center and then correlates the values of a particular variable with that combination. A variable with a large discriminant weight is said to be a good predictor of quality of the center.

Donations - refer to in-kind donations of goods and services (but not cash) to child care centers by individuals and agencies. These include donations or discounts on facilities, utilities, facilities maintenance, food, materials, or equipment. They also include services of volunteers.

Econometric model - involves developing a causal statistical model based on the insights of economic theory and then testing the model with all relevant variables included simultaneously. The tested model is then used for predictions of the effects of a particular set of independent variables on the dependent variable or variables.

Economies of scale - exist in the production of a good or service if the average total cost per item produced is lower for larger businesses producing more of the item per hour. For example, a medical practice involving several internists can provide general patient care at lower cost per visit than can a single physician with his own office. In the case of child care, economies of scale would exist if larger centers designed to serve more children provided similar quality care at a lower cost per child hour as compared to smaller centers. In the short run, scale economies refer to decreasing average variable cost as output increases and exclude the fixed costs of the center. In the long run, scale economies include all costs, even those that are fixed in the short run.

Economies of scope - exist if the cost per unit of output is lower because a business produces several related products or services at once. For example, a medical clinic might offer services in internal medicine, pediatrics, and sports medicine. There would be economies of scope if the cost per treatment are lower when the services are combined in one clinic than if each specialty is organized separately. In the case of center child care, there would be economies of scope if provision of care for children of several age-groups lowers the overall cost per child hour. There might also be economies of scope if other related programs are integrated into the services provided by the center.

Effective demand - is the desire for a good or service at the price offered, backed up by the resources to pay for it. Only effective demand is reflected in the market.

Efficiency - of a production process measures the output produced in a given time-period by a particular amount of inputs. A highly efficient process produces more output per hour or day with a given amount of resources than alternative technologies.

Expended costs - are cash costs or expenses a center incurs to operate the center programs. It excludes the value of in-kind donations of space or other resources used to provide services.

External benefits and costs - to market transactions occur whenever people other than the direct purchaser of a good or service benefit from someone else buying the good or service. In such cases, those that benefit and do not pay for the item are getting a "free ride" because they are not paying for the service, and this may mean that not enough of the service is demanded. For instance, farmers provide an external *benefit* in creating a beautiful country-side which people from the city can drive out to see. This is an external benefit, because the people from the city do not pay for their enjoyment. Child care may provide external benefits to taxpayers if children who receive these services do better in school and require fewer publicly provided services as they grow up. External costs occur when a production process creates costs which are not included in the price of the product produced, for instance, the water pollution which is created by farmers using insecticides and herbicides.

Fixed inputs - are the child care inputs that cannot be changed easily in the short-run. An example is the space occupied by the center.

Forecast wages - are the wages an employee in ECE with given characteristics of gender, age, years of education, and location, could earn in other jobs.

Foregone earnings - are foregone wages and benefits. Foregone wages are defined below and benefits are the difference between benefits actually received in child care jobs and benefits received by workers in the economy as a whole.

Foregone income - see foregone earnings.

Foregone wages - is the difference between the wage a person could earn--given her/his years of education, age, marital status, gender, racial/ethnic origin--and what the person actually earns. Ideally, other factors affecting wages would also be included, for instance, job experience. These are foregone wages because the person could have earned this extra amount in another job for which he/she is qualified. For example, an artist with a master's degree representing sixteen years of education may choose to pursue her art while working as a library assistant, foregoing a much higher income as a graphic designer for an advertising agency.

Full cost - refers to the amount it would take to operate centers if all resources were purchased at market prices. In this study, the full cost of care equals expended costs plus donations plus foregone wages.

Full-time equivalent (FTE) - refers to the number of full-time equivalent children enrolled in a center. That is, if a center has a full-time program in which children are present eight to ten hours a day, to measure enrollment, each child is counted as one full-time equivalent. If this center also has a morning program for preschool children, each child in the morning program would be considered 1/2 a full-time equivalent in measuring total center enrollment. If the center has a before- and after-school program, a child which is enrolled both for the before-school and after-school portion of the program would be considered one full-time equivalent school-aged child for purposes of measuring center enrollment.

Hidden action - is the tendency to provide lower quality and lower cost care to customers who cannot monitor service provision.

Hierarchical regression analysis - is a statistical technique of adding variables to a regression model in a theoretically determined order. Variable coefficients are determined to be significant when first entered and again in later iterations that include more variables. If the significance levels change with additional variables, the differences are noted and discussed.

Independent variable - is a variable whose value is not determined in the cost or quality production function in the industry. These variables determine the values of the dependent variable.

In-kind donations (Supply subsidies) - include goods and volunteer services (not cash) given to centers free or at reduced prices. Goods consisted of donated or discounted space, insurance, equipment, food, and supplies and were measured by the director's estimate of value.

Inputs - are the resources that are employed to produce the output.

Intermediate goods - are distinguished from final goods and services. A final good or service is something which is produced and sold to the final consumer, such as a TV set or child care services. An intermediate good is a product which is produced to be used to produce some final good or service, for instance, lumber to be used in housing, or toys purchased by a child care center. (Toys purchased by families, on the other hand, would be considered a final good.)

Labor costs - consist of wages and nonwage benefits along with two small items of education for staff and the costs of subcontractors.

long-run cost function - a cost function where all inputs to production, including capital, can vary.

Low wage labor force - is composed of people with little work experience or few skills, part-time workers, people who move in and out of the labor force, and groups who have been discriminated against in the labor market.

Market demand - describes the relation between the amount and quality of services buyers purchase, and fees.

Market failure - See market imperfections.

Market imperfections - is often used synonymously with market failures. A market imperfection exists if, for some reason, market competition does not allocate resources in accordance with the demand for the product at a price which reflects the minimum cost of production. Commonly cited causes are monopoly pricing which restricts supply and raises prices, external benefits or costs (such as pollution from manufacture), agency problems, imperfect consumer knowledge, and merit or collective goods. When there are market imperfections, market competition fails to supply optimal amounts of goods and services (at low cost). Market imperfections or failures seem to exist in child care markets. For instance, imperfect consumer knowledge about the importance of good quality care may reduce private (parent) demand and public demand (including government and philanthropies) for good-quality care.

Market prices - are the prices in the local market for products closely comparable to a resource used in child care. In this study, the wage rate for staff with a particular level of education is compared to the "market price" in that city or state for labor in all fields with similar characteristics of education, gender, age and minority status.

Merit goods - are goods or services that society as a whole or a large number of altruistic members are willing to pay for because they think everyone who needs it should have access to the good or service regardless of their ability to pay or their personal tastes. Merit goods reflect the values of the society; thus, what is considered to be a merit good changes over time. Some examples of merit goods are health care for pregnant women and young babies, police protection, and potable water.

Mixed industries - are industries that include firms organized as profit making businesses, nonprofit agencies, and sometimes public agencies. The child care center market is a mixed industry because services are supplied by establishments with different structures of ownership.

Monopolistic competition - is the name given to describe highly competitive markets with large numbers of buyers and sellers where the suppliers provide a differentiated product or service. For instance, the restaurant business is monopolistically competitive, because there are a lot of restaurants, each located in a different place, each providing a slightly different menu, and each with different decor and different staff. Center child care markets are monopolistically competitive because centers compete keenly for customers in their local market area, and provide services which are different in many ways, one from another. Centers are relatively easy to open, and while somewhat expensive to start up, these costs are not high compared to industries dominated by big business. Furthermore, family child care providers compete as an alternate and often less expensive substitute for center child care.

Occupancy costs - include rent or mortgage payment, utilities, maintenance, and repair.

Occupancy subsidies (or donations) - are the estimated market value of the space occupied by the center minus what the center actually paid if the center director said that they received a subsidy or discount.

Other operating costs - include office supplies, children's program supplies, maintenance supplies, equipment rental and maintenance, nondepreciated equipment, depreciation on equipment, transportation and travel, telephone, postage, marketing, advertising, public relations, photocopying, printing, publications, licensing and fees, dues and subscriptions, interest payments and bank service charges, and other.

Output - the quality and the amount of child care services produced by the center.

Overhead costs - are the fees paid by a center to a central administration for services provided, such as common advertising or accounting for a system of centers.

P-complement - is a factor whose use increases when the price of another factor decreases. The reduction in price of factor A causes an increase in the use of factor A and an increase in the use of its complement, factor B.

P-substitute - is a factor whose use decreases when the price of another factor decreases. The reduction in price of factor A causes an increase in the use of factor A and an decrease in the use of its substitute, factor B.

Process quality (also "quality") - refers to the general environment and social interactions in a child care classroom. It represents the quality of services that are directly received by children and their families which cannot be regulated because of their qualitative nature. In this report we refer use the process quality index to describe overall quality of a center.

Production function - identifies how much output changes when inputs change, assuming a particular technology.

Production technology - is the manner in which the variable inputs are combined with the fixed inputs to produce output of the child care center.

Public fees - are the state fees for the care of poor children and USDA funds from the Child and Adult Care Food Program.

Public goods - are goods that meet two conditions: (1) additional people can receive the benefit of the good at no additional cost to the producer; (2) additional people cannot be prevented from consuming the good, even if they refuse to pay for it. Traditional examples are national defense and radio signals. The term is also used sometimes to designate the more inclusive category referred to as collective goods.

Reimbursement Rate - The maximum payment by the state to the center, by age, for child care for children of poor families.

Resource and referral agencies - are local organizations whose purpose is to direct parents to available child care centers or family child care homes. They may also coordinate training opportunities for providers and otherwise help providers to develop new services, including centers and homes. Finally, they may also work with local businesses and communities to increase awareness of community and parent needs for child care and other work-related services.

Revenue - refers to the total amount of income received by a center, including fees paid by parents, publicly reimbursed fees, USDA food grants, other public funds, sponsor and other private contributions, and other revenue.

Secondary labor force - see low wage labor force.

Sector - is used in this study to distinguish between nonprofit and for-profit centers.

Segmented market - is an industry where the market is divided into several submarkets, each with different types of producers serving different clientele. For example, public school centers may serve at-risk children in their service area, whereas for-profit centers serve a range of middle class families. The two types of centers may compete directly for a very small proportion of either center's market.

Shirking - is the misuse of subsidies to allow a nonprofit organization to pay higher salaries (especially to management) or hire more people than is necessary to do the job. As a result, subsidies to nonprofit centers would not lower child care costs to parents and might contribute to inefficient allocation of resources.

Short-run decreasing average costs - exist if average variable cost per child hour decreases with an increase in total child hours provided by the center. This is called short-run because the size of the center (its legal capacity) is fixed. The long-run equivalent is economies of scale.

Structural quality - measures include staff-to-child ratio, group size, staff education and experience, square feet of facility per child, and other measures of the quality of the facility that houses the center. They are aspects of classroom structure that can be regulated to improve the quality of services to children.

Subsidies - are defined in this study as anything that either reduces the cost of providing care to children such as in-kind donations or foregone earnings, or that allows children whose parents could not otherwise afford care to attend a particular center.

Supply subsidies - are things that reduce the cost of providing care in general.

Systems - are entities composed of interrelated parts which perform a set of functions to achieve given goals. Organizations can be thought of as systems. Often, systems are designed to generate information which can be used to monitor and improve their functioning. In this study we depict child care centers as systems designed to provide services for families and their children based on certain goals that have been identified by the owners or board of directors. Center operations provide information on themselves which can then be used to revise procedures to improve center performance. For instance, the center keeps financial accounts to assist in its planning and check on its success in staying within its budget. Centers also keep track of children's development and attendance, and a myriad of other aspects of the program for use in evaluation and improvement.

Transactions costs - in this study, include the time, money and effort that go into a family's search for and choice of a child care provider who meets the family's needs.

Total variable costs - are the costs that change with the volume of services provided in the short-run when the amount of physical space available is fixed. For example, a center can increase the number of children served by offering more diversified services at different times of the day. This can increase the number of hours of service offered in the same physical location. Thus, total variable cost excludes rent or mortgage payments which are fixed costs in the day-to-day operations of the centers. In this study, total variable cost includes the value of donations which represent resources used to provide services as well as an imputed value of the services of owner-operators (or nonprofit administrators) who do not take a salary.

Transaction costs - are the monetary and nonmonetary costs of purchasing a good or service in addition to the price of the item itself. For instance, in shopping for clothes, transaction costs are the costs of travelling to the stores, shopping around, and, possibly, returning to pick up alterations. In child care purchases, transaction costs include time spent searching for a center, visiting centers, and monitoring the center after choosing it.

Trust goods - are goods or services the quality of which are very important to the purchasers but difficult for the purchaser to assess accurately. Services provided by nursing homes and child care centers are trust goods. For buyers who wish to be assured that they are purchasing good quality, they will often pay more for a brand or service which they have reason to believe is of better quality. This is the reason that accreditation of child care centers is a useful device for both buyers and sellers. Buyers can know that accreditation is related to good-quality services.

Translog cost function - is a second-order Taylor series approximation to an unknown, underlying, twice-differentiable function. It includes specific terms for the interactions among many of the variables in the underlying cost function.
The empirical counterpart of equation (1) is the following translog cost function:

Variable inputs - are the child care inputs that can be changed in amounts used in the short-run. Since the center can adjust the use of labor by layoffs and new hires, labor constitutes a variable input. Food and materials are also examples of variable inputs.

Wage elasticity - is the percentage change in the use of a class of labor resulting from a percentage change in the wage for that class of labor. If a ten percent increase in the wage rate for a particular group of laborers leads to a 2% reduction in their use, then the wage elasticity is -0.2.

Director's Interview

The following pages are a reproduction of the central data collecting instrument for this study--the form for the director interview. Researchers who are considering using this instrument, even in part, should call the authors as there are parts of the instrument that were more successful than others. Some questions should be revised before further use.

DIRECTOR INTERVIEW
COST AND QUALITY CHILD CARE STUDY: COVER PAGE
(to be removed before data entry)

STATE 1 2 3 4 **DATE**__________________

AUSPICE: For Profit Not For Profit

CENTER NAME ____

OBSERVER'S NAME ____

DIRECTOR'S NAME ____

CENTER TELEPHONE ( )______________________

NOTE THAT ALL INSTRUCTIONS TO YOU ARE PRINTED IN BOLD, SMALL CAP ITALICS.

***** ALL ITEMS THAT ARE DOUBLE STARRED IN THIS INTERVIEW ARE CRITICAL PIECES OF DATA THAT MUST BE COLLECTED. IF YOU FAIL TO GET A REASONABLE ANSWER (WE DO NOT NEED PERFECTION) TO 2 OR MORE OF THESE ITEMS, AFTER TRYING VARIOUS WAYS TO HELP THE DIRECTOR, THE CENTER WILL NOT BE ABLE TO PARTICIPATE IN THE STUDY. YOU SHOULD END THE INTERVIEW AT THE POINT WHERE YOU ARE SURE THAT YOU WILL NOT BE ABLE GET ANSWERS (EITHER DURING THE INTERVIEW OR AT A LATER DATE) TO THESE CRITICAL QUESTIONS. THE TRICK, OF COURSE IS LEARNING WHAT CONSTITUTES A REASONABLE ANSWER TO A CRITICAL QUESTION. A SUGGESTED RULE OF THUMB IS THAT THERE IS SOME BASIS FOR THE ANSWER WHICH MAKES SENSE TO YOU. THESE QUESTIONS ARE LISTED IN THE TABLE ON THE NEXT PAGE. PLEASE CHECK OFF AS YOU COLLECT THESE DATA AND COMPLETE THE TABLE AT THE END OF THE INTERVIEW.***

GIVE THE DIRECTOR HER/HIS VERSION OF THE INTERVIEW QUESTIONAIRE, WHICH YOU NEED TO COLLECT AT THE END OF THE INTERVIEW, EXCEPT FOR THOSE PORTIONS WHICH THE DIRECTOR WISHES TO COMPLETE AND RETURN TO THE OBSERVERS WHEN THEY VISIT, OR, BY MAIL.

CONTACT PERSON FOR ADDITIONAL COST INFORMATION:

____

TELEPHONE NUMBER______________________

CHECK LIST: STATUS OF DATA COLLECTION

The table below lists critical data that must be collected. During the interview or after you complete it, use this check list to identify remaining data which must be collected, how to proceed in collecting it, and data which it is impossible to collect.

In column (1) list data you were not able to collect.

In Column (2) indicate the mechanism for completing data collection if it is possible to do so:

(1) call back the director;
(2) call central office (name and phone number should be on cover sheet)
(3) other (specify)____

In Column (3) check if you do not believe the data can be collected and explain why.

(1) Data Description	(2) Next Step	(3) Cannot be collected and why
A16 - A18		
B6		
B15		
Section C		
D1		
D3-D9		
D11-D18		
Section E		
Section F		
G10		
H1, part 3		
I1-I5		
Other, specify		

INTRODUCTION

INTERVIEWER: *REVIEW THIS INFORMATION WITH THE DIRECTOR BEFORE YOU START THE DIRECTOR'S INTERVIEW. WHILE ALL PARTICIPATING CENTERS WILL HAVE HAD CONTACT WITH THE LOCAL STUDY OFFICE AND WILL HAVE AGREED TO BE A PART OF THE SAMPLE, SPEND A FEW MINUTES TALKING ABOUT THE STUDY, ITS GOALS AND PURPOSES.*

STUDY PURPOSE: TO GATHER SPECIFIC COST AND PROGRAM INFORMATION ABOUT CHILD CARE AND EDUCATION PROGRAMS. THIS IS A NATIONAL STUDY OF GREAT SIGNIFICANCE IN WHICH WE WILL LEARN:

- *WHAT RESOURCES ARE NEEDED FOR A GOOD CHILD CARE PROGRAM, AND HOW CENTERS USE RESOURCES TO DEVELOP EFFECTIVE PROGRAMS FOR CHILDREN*
- *ABOUT SIMILARITIES AND DIFFERENCES IN PROGRAMS IN DIFFERENT PARTS OF THE COUNTRY.*
- *HOW CENTERS OPERATE UNDER DIFFERENT AUSPICES.*

PROCEDURES FOR VISITING CENTERS: WE WILL VISIT CENTERS ON TWO DIFFERENT DAYS.

1. THIS VISIT IS TO COMPLETE THE DIRECTOR INTERVIEW ABOUT THE CENTER'S PROGRAM, FINANCES, AND THE LEADERSHIP OF THE CENTER, AND TO GET SOME INFORMATION ON THE FACILITY. THE INTERVIEW WILL TAKE 2 TO 2 1/2 HOURS, THOUGH IT MAY BE NECESSARY TO TALK AGAIN BY PHONE ABOUT SOME DETAILS.

2. IN THE SECOND VISIT TWO OBSERVERS WILL COME TO OBSERVE TWO RANDOMLY SELECTED CLASSROOMS. THEY WILL ASK THE STAFF IN THOSE ROOMS TO COMPLETE A SHORT QUESTIONNAIRE (10-20 MINUTES) AND THEY WILL ALSO DISTRIBUTE A QUESTIONNAIRE TO THE PARENTS. TELL THE DIRECTOR BRIEFLY ABOUT THE OTHER TWO TEAM MEMBERS AND ABOUT THE

CONFIDENTIALITY: WE WILL MAINTAIN STRICT CONFIDENTIALITY IN HANDLING ALL DATA. CENTERS ARE ONLY REFERRED TO BY THEIR CODE NUMBERS, SO THERE IS NO WAY TO IDENTIFY CENTERS. THE COVER SHEET OF THE DIRECTOR'S INTERVIEW WILL BE TORN OFF AFTER THE INTERVIEW AND KEPT IN A LOCKED FILE, AS WILL THE LIST OF PARTICIPATING CENTERS. INFORMATION WILL BE SUMMARIZED IN THE STUDY REPORTS SO THAT NO CENTER CAN POSSIBLY BE IDENTIFIED.

END PRODUCT OF THE STUDY AND STUDY FUNDING: RESULTS WILL BE PUBLISHED IN POLICY REPORTS TO THE PUBLIC, GOVERNMENT LEADERS, PROVIDERS AND PARENTS. THE STUDY IS FUNDED BY SEVERAL FOUNDATIONS AND HAS A NATIONAL ADVISORY COMMITTEE THAT IS OFFERING ADVICE AND GUIDANCE TO THE PROJECT. COLORADO AND NORTH CAROLINA HAVE STATE LEVEL ADVISORY COMMITTEES.

OUR GRATITUDE TO PARTICIPATING CENTERS: WE RECOGNIZE THE IMPORTANCE OF DIRECTOR AND CENTER PARTICIPATION, AND REALLY APPRECIATE THEIR COOPERATION. WE ALSO REALIZE HOW MUCH WE ARE INTRUDING ON THEIR DAILY ROUTINE. AS A TOKEN OF APPRECIATION WE WILL HOLD A WORKSHOP THIS SUMMER FOR DIRECTORS AND LEAD TEACHERS WHO PARTICIPATE IN THE STUDY TO SHARE OUR EXPERIENCE, AND HOLD USEFUL TRAINING SESSIONS: FOR INSTANCE, IN USING ECERS AND ITERS, IN FINANCIAL ADMINISTRATION, AND IN LEADERSHIP.

CODE:	-	- - -	- - -	-	0	0	0	0	0
	S	Center	M D D	Obs	Room	Gen	Eth	Cno	T

SECTION A: GENERAL CENTER INFORMATION

The questions in this section ask about the general structure and history of your program. The first group of questions has to do with how the program at your center is organized. We want to know about the services you provide for children and families.

A1. What is the date when this center started to operate?

Month_____ Year______

A2. What is the date when you began work as the director of this center?

Month_____ Year______

A3. Centers have different purposes and goals for the services they provide. These are sometimes summarized in terms of the center's philosophy. The goals and philosophy describe how the center tries to provide services that are appropriate for the families they serve. Please tell me, does your center have a written statement of your goals and/or philosophy? *(CIRCLE CORRECT ANSWER.)*

YES [1] NO [0]

INTERVIEWER: IF THE CENTER HAS A WRITTEN STATEMENT, ASK THE DIRECTOR FOR A COPY.

A4. Do you use a specific curriculum approach based on a particular philosophy, like Montessori, High/Scope, a particular religious view, or other? *(IN THE BRACKET TO THE RIGHT, WRITE IN THE NUMBER FOR THE CORRECT ALTERNATIVE.)*

[ ]

1. No
2. Yes, Montessori
3. Yes, High/Scope
4. Yes, Waldorf
5. Yes, Piaget
6. Yes, a particular religious orientation
7. Yes, Other (SPECIFY)_________________________________

A5. What are the programs you offer in this center? *(WRITE 1 IN THE BRACKET TO THE RIGHT OF EACH ALTERNATIVE THAT APPLIES.*

1. Full-day program defined as more than 30 hours per week and at least five days per week . . . . [ ]
2. Part-day or part-week program such as two or three hours in the morning and/or in the afternoon (pre-school) . . . . . [ ]
3. Part day extended care before, during, or after the preschool program . . . . [ ]
4. Head Start sponsored part-day program . . . . [ ]
5. Public schools sponsored part-day program . . . . [ ]

6. Before and after school care for school-agers . . . . . . [ ]
7. Summer camp programs for school-agers . . . . [ ]
8. Evening care . . . . [ ]
9. Weekend care . . . . [ ]
10. Sick care . . . . [ ]
11. 24 hour care . . . . [ ]
12. Bilingual program . . . . [ ]

A6. What is the legal maximum number of children which can be present in your center at one time according to your license? That is, what is the legal capacity of the center? ***(INTERVIEWER: COLLECT THIS INFORMATION IN ACCORDANCE WITH YOUR STATE'S LAW, WHICH MAY SPECIFY TOTAL CAPACITY FOR THE WHOLE CENTER, OR BY AGE GROUPS. CAPACITY, THE LEGAL MAXIMUM NUMBER OF CHILDREN, IS USUALLY BASED ON USABLE SPACE PER CHILD, THAT IS, ON THE PHYSICAL SIZE OF THE CENTER.)***

MAXIMUM NUMBER INFANTS______

MAXIMUM NUMBER TODDLERS_____

MAXIMUM NUMBER PRE-SCHOOL______

MAXIMUM NUMBER OF SCHOOL-AGED(over 60 months)______

MAXIMUM TOTAL NUMBER OF CHILDREN______

A7. Are there families who are waiting to enroll their child but you cannot admit at this time? That is, do you have a waiting list of children?

YES [1] NO [0]

A8. How many children are on your waiting list today in the following age categories? ***(WRITE THE NUMBER IN EACH AGE GROUP IN THE SPACE PROVIDED.)***

1. Less than 12 months old ________
2. 12 months to 29 months old ________
3. 30 months to 5 years old ________
4. School-aged Children over 60 months or five years old ________

A9. What days of the week is your center regularly open? ***(CIRCLE THE NUMBER FOR ALL DAYS THE CENTER IS REGULARLY OPEN)***

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1	2	3	4	5	6	7

A10. What hours of the day is your center open Monday through Friday?

The center opens *(EXACT MILITARY CLOCK TIME)*__________________

The center closes *(EXACT MILITARY CLOCK TIME)*__________________

A11. Are there any whole months of the year when your center is closed? *(CIRCLE THE NUMBER FOR ANY WHOLE MONTHS (100% OF THE MONTH) THE CENTER IS CLOSED.)*

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1	2	3	4	5	6	7	8	9	10	11	12

Legal Status. We are interested in knowing the legal status of your center, that is, whether it is a for-profit, private nonprofit, or a public agency. Also, if you are affiliated with some other organization we want to be able to describe that agency.

A12. A child care center may be classified as a nonprofit by the state or federal government, or the center may be considered for-profit if it is operated by an individual, group, or company which has the potential to earn profits from providing the services.

How is the operator of this center (the person or organization who runs the center) organized?
(WRITE THE NUMBER IN THE BRACKET FOR THE CORRECT ALTERNATIVE.) [ ]

For profit
  1. an independent owner/operator
  2. a local or regional chain of two or more centers
  3. a national chain which franchises to a local operator
  4. a national chain which operates the center directly
  5. an on-site center operated by a business for its employees

Not-for-profit
  6. a parent cooperative
  7. a private grade or high school or college
  8. a church
  9. affiliated with, but not operated by, a church
  10. an independent nonprofit center, but not one of the above
  11. a nongovernmental community agency
  12. other

As a public agency
  13. public college or university
  14. public elementary or high school
  15. state or local government agency, but not one of the above
  16. federal agency, but not Head Start
  17. other

A13. Is your center or its sponsor certified as a nonprofit corporation by the United States Federal government? That is, is it exempt from paying Federal taxes on its income? For instance, has your center (or its sponsor) received from the U.S. Internal Revenue Service a determination that it is tax-exempt under section 501 (c) (3) or some other section of the Internal Revenue Code? Please note that this question does not refer to paying Social Security taxes or to withholding of employees' individual income taxes.

YES [1] NO [0] DON'T KNOW [99]

A14. Sometimes a center is owned (or sponsored) by one organization or person and operated by a different organization or person. Is your center owned and operated by the same organization?

YES [1] NO [0]

A15. *(IF THE ANSWER TO A14 IS NO)* Choose one of the following types of organizations which owns or sponsors the center.

(WRITE THE NUMBER CORRESPONDING TO THE CORRECT ALTERNATIVE IN THE BRACKET.) [ ]

1. For-profit
2. Not-for profit
3. Public agency

****A16.** Present Enrollment and Staffing. I want to collect information to describe the make up of your individual classes today. How many classes or rooms do you have in the center?

Number of rooms [ ]

(INTERVIEWER: IN THIS QUESTION, WE ASK FOR NUMBERS IN TERMS OF THE FULL-TIME EQUIVALENT FTE CHILDREN AND STAFF. PLEASE CONSULT THE DEFINITIONS IN THE INTERVIEWERS INSTRUCTION SHEET AND THE SHORT DEFINITIONS BELOW FOR INSTRUCTIONS ON COUNTING FTE CHILDREN AND STAFF. ALSO, IF THE DIRECTOR HAS NOT CHECKED ON THE DAY'S ATTENDANCE IT WILL BE NECESSARY FOR YOU TO ASK IF YOU CAN HAVE IT BEFORE YOU LEAVE.)

TO COLLECT THE DATA IN THE FOLLOWING TABLE, ASK THE DIRECTOR TO DESCRIBE THE COMPOSITION OF EACH ROOM AT THE CENTER, STARTING WITH THE AGE OF CHILDREN IN THE ROOM.

DEFINITIONS: Use the following definitions to complete this section:

Teacher refers to persons in charge of a group or classroom of children, often with staff supervisory responsibilities. This category includes head or lead teachers.

Assistant Teacher/Aide refers to persons working under the supervision of a teacher.

Teacher-Director refers to a person with both teaching and administrative duties on a regular basis (teaching is not limited to filling in for absent teachers.)

Floater refers to a regular paid staff person who is not regularly assigned to the room, but is in the classroom today.

FTE means "*full time equivalent.*" The objective is to count the number of full-time slots for children and full-time staff positions.

For children:
1/2 day per week = .1 or 1/10th FTE
1 whole day per week = .2 or 1/5th FTE
Three 1/2 days per week = .3 FTE

For staff: Count 7 or 8 hours as 1 day and .2 or 1/5th FTE.
1/2 day per week = .1 or 1/10th FTE
1 whole day per week = .2 or 1/5th FTE
Three 1/2 days per week = .3 FTE
2 hours for a staff person = .05 or 1/20th FTE

A16XA. How many hours per day do you consider to be full day for a typical infant-toddler in your center?

6 7 8 9 10 11 12

A16XB. How many hours per day do you consider to be full day for a typical preschooler in your center?

6 7 8 9 10 11 12

A16XC. How many hours per day do you consider to be full day for a typical school-aged child in your center?

6 7 8 9 10 11 12

Column 1: Age of Children in Months. Circle each number that applies.

1. < 1 year old
2. 2 years old
3. 3 years old
4. 4 years old
5. 5 years old
6. 6 years old or more

Column 2: Number of FTE teachers or group leaders in the room today. Count floaters and substitutes in the classification of the person they are replacing. Do not double count.

Column 3: Number of FTE assistant teachers/aides in the room today. Count floaters and substitutes in the classification of the person they are replacing. Do not double count.

Column 4: FTE Licensed Capacity for the Room.

Column 5: Your preferred maximum FTE enrollment in this room.

Column 6: The number of FTE children enrolled in this room.

Column 7: The number of FTE children present today.

ENROLLMENT and STAFFING

Room	(1) Ages of children	(2) # FTE Teachers	(3) # FTE Assts + Aides	(4) Legal FTE Capacity	(5) Preferred Max enrollment	(6) # FTE children enrolled	(7) # FTE children today
Room 1	1 2 3 4 5 6						
Room 2	1 2 3 4 5 6						
Room 3	1 2 3 4 5 6						
Room 4	1 2 3 4 5 6						
Room 5	1 2 3 4 5 6						
Room 6	1 2 3 4 5 6						
Room 7	1 2 3 4 5 6						
Room 8	1 2 3 4 5 6						
Room 9	1 2 3 4 5 6						
Room 10	1 2 3 4 5 6						
Room 11	1 2 3 4 5 6						
Room 12	1 2 3 4 5 6						
TOTAL							

(INTERVIEWER: ADD UP THE TOTAL FTE CHILDREN ENROLLED TODAY, RECORD IN COLUMN 6 IN THE ROW MARKED TOTAL, AND ASK THE DIRECTOR IF THAT NUMBER IS ABOUT RIGHT.)

****A17.** What was your FTE enrollment by age of children for these months in the past two years? *(COMPLETE THE FOLLOWING TABLE. IF DATA ON THESE MONTHS ARE NOT AVAILABLE, USE DATA FOR THE CLOSEST EARLIER OR LATER MONTH.)*

Age group	September, 1991 (if available)	March, 1992	September, 1992
Infants			
Toddlers			
Pre-school			
School-aged			

(INTERVIEWER: IF THE DIRECTOR CANNOT GIVE A FAIRLY ACCURATE ANSWER ABOUT PAST ENROLLMENT FIGURES, ASK A18 AS AN ALTERNATIVE QUESTION. OTHERWISE GO TO A19.)

****A18.** Have you had a significant change in FTE enrollment in the last year? If so, please give me an estimate of the percentage increase or decrease in enrollment.

Percentage increase or decrease [use (-) for decrease] ________

A19. How many hours of floating caregivers are you using this week? A floating caregiver is any paid employee who works with children as a teacher or assistant teacher/aide, but is not regularly assigned to a room, or one who may have regular room assignments, but does not spend many hours per day in any one room. *(IF NONE, WRITE 0)*.

Total # hours worked by floaters this week_____

A20. Please indicate whether your center provides each of the services listed below. This is a large list of services and not all centers would be expected to provide all of them. ***(WRITE A 1 IN THE BRACKET TO THE RIGHT FOR EACH ALTERNATIVE THAT APPLIES.***

		CENTER PROVIDED SERVICE
1.	Vision screening	[ ]
2.	Hearing screening	[ ]
3.	Dental screening	[ ]
4.	Measurement of height and weight annually	[ ]
5.	Speech screening	[ ]
6.	Speech services	[ ]
7.	Developmental assessments	[ ]
8.	Counseling services for children and parents (other than routine parent conferences)	[ ]
9.	Social Services to parents such as obtaining food stamps, financial aid, housing, or medical care	[ ]
10.	Transportation services from home to center	[ ]
11.	Transportation services from school to center	[ ]
12.	Meals for children provided by the center	[ ]

A21. How many special needs children are enrolled at present? By special needs we mean children with either a physical disability (including hearing or sight problems) or a mental disability.

Number (head count) of special needs children enrolled [ ]

A22. Does your center regularly arrange educational activities, such as workshops or lectures on child development for parents? If you do arrange such activities, about what percent of parents attended the most recent event of this type? ***(WRITE THE NUMBER OF THE CORRECT ALTERNATIVE IN THE BRACKET TO THE RIGHT.)***

[ ]

1. Yes, less than 1/4th of the parents attended the last event.
2. Yes, 1/4 to 1/2 of the parents attended the last event.
3. Yes, over 1/2 of the parents attended the last event.
4. No, we rarely arrange such activities.

A23. How else does your program involve parents? For the following, tell me your policy about involving parents: (1) required, (2) encouraged, (3) not required or encouraged. ***(WRITE IN THE APPROPRIATE NUMBER (1, 2, OR 3) IN EACH BRACKET TO THE RIGHT.)***

1. Some time spent in the center each week, in addition to drop off and pick up . . . . [ ]
2. Assistance in fund raising . . . . [ ]
3. Help in maintaining the physical setting . . . . [ ]
4. Participation in parent advisory groups . . . . [ ]
5. Participation in excursions or field trips . . . . [ ]
6. Participation in celebrations, holidays, festivals . . . . . [ ]
7. Assistance with repair or renovation of facilities . . . . . [ ]
8. Assistance gathering resources and supplies . . . . [ ]

A24. Approximately what percentage of children enrolled in your program come from the following ethnic or racial groups? ***(WRITE IN PERCENTAGES.)***

1. White, non Hispanic . . . . [ ]
2. White, Hispanic/Latino . . . . [ ]
3. African-American/Black, non Hispanic . . . . [ ]
4. African-American/Black, Hispanic . . . . [ ]
5. Asian/Pacific Islander . . . . [ ]
6. Native American . . . . [ ]
7. Other . . . . [ ]

SECTION B: STAFFING POLICY, TRAINING AND TURNOVER

This section asks general questions about your staffing policy. A later section will ask questions about individual staff members.

DEFINITIONS: The questions in this section use these job titles and definitions:

> Teacher refers to persons in charge of a group or classroom of children, often with staff supervisory responsibilities. This category includes head or lead teachers.
>
> Assistant Teacher/Aide refers to persons working under the supervision of a teacher. In this study we are not distinquishing between what may be two different job classifications in some centers.
>
> Teacher-Director refers to a person with both teaching and administrative duties on a regular basis (not just filling in for absent teachers.)
>
> Administrative Director refers to persons who primarily have administrative responsibilities only.

Do you use different titles for the staff positions in your center? *(INTERVIEWER: IF THIS CENTER USES SOMEWHAT DIFFERENT TITLES, ASK THE DIRECTOR TO MATCH THE TITLES USED IN THE CENTER TO EACH OF OUR JOB TITLES. WRITE THEM DOWN IN THE SPACE PROVIDED BELOW. IF NO COMPARABLE POSITION EXISTS, WRITE N/A FOR THAT CATEGORY. OUR PURPOSE IN ASKING THIS QUESTION IS TO CREATE INTERNAL CONSISTENCY IN ANSWERS IN THIS SECTION. IT SHOULD BE EASIER FOR THE DIRECTOR TO ANSWER THE FOLLOWING QUESTIONS CORRECTLY IF THE TWO OF YOU CAN TRANSLATE FROM THE CENTER'S JOB TITLES TO THOSE USED IN THE INTERVIEW. IN SOME CENTERS THERE MAY BE NO FORMAL JOB TITLES. IF THIS IS THE CASE, GET THE DIRECTOR TO IDENTIFY PEOPLE'S JOBS IN TERMS OF THEIR RESPONSIBILITIES OR TRAINING. IN ANY EVENT, IT IS IMPORTANT TO FIND A WAY TO FIT THE CENTER JOB TITLES INTO OURS.*

____________________ Teacher

____________________ Assistant Teacher/Aide

____________________ Teacher-Director

____________________ Administrative Director

Are there any other regular staff who work directly with children (e.g., music teacher, swim instructor, van drivers, nurse?) If yes, please indicate their titles. *(INCLUDE THESE TITLES TOGETHER AS 'OTHER' IN THE FOLLOWING QUESTIONS.)*

____

____

B1. For the following categories of staff, do you provide any in-service training or require continuing education (other than staff meetings), either at or away from the center, beyond what is required by licensing regulations?
(WRITE 1 IN THE BRACKET TO THE RIGHT OF EACH TYPE OF STAFF FOR WHICH THE CENTER PROVIDES IN-SERVICE TRAINING OR REQUIRES CONTINUING EDUCATION.)

1. Teachers	[ ]
2. Assistant Teachers/Aides	[ ]
3. Teacher-Directors	[ ]
4. Administrative Directors	[ ]
5. Other	[ ]

B2. How many of your staff members received 15 classroom hours or more of in-service training sponsored by your center during the last 12 months at the center or outside the center? Include attendance at conferences.
(ENTER THE NUMBER OF STAFF FOR EACH GROUP.)

	at the center	outside the center
1. Teacher	[ ]	[ ]
2. Assistant Teacher/Aide	[ ]	[ ]
3. Teacher-Director	[ ]	[ ]
4. Administrator/Director	[ ]	[ ]
5. Other	[ ]	[ ]

B3. Do you schedule regular staff meetings? If you do, how frequently do you schedule staff meetings?
(ENTER THE NUMBER OF THE CORRECT ANSWER IN THE BRACKET TO THE RIGHT.) [ ]
1. Weekly
2. At least twice a month
3. Monthly
4. At least 4 times/year
5. Twice a year
6. No, we do not have regular staff meetings.

B4. Do you provide released time to staff members to pursue college coursework for credit or degrees?
(ENTER THE NUMBER OF THE CORRECT ANSWER IN THE BRACKET TO THE RIGHT.) [ ]
1. Yes, through released time with pay from work
2. Yes, through released unpaid time from work
3. No

B5. Do you pay tuition for staff members enrolled in college courses?
(ENTER THE NUMBER OF THE CORRECT ANSWER IN THE BRACKET TO THE RIGHT.) [ ]
1. Yes, partial payment of tuition
2. Yes, full payment of tuition
3. No, we do not pay tuition

****B6.** How many of the center's regular (whether full-time or part-time) **staff** members have left the center in the last 12 months? By **regular, we** mean any person working with children holding one of the following **types** of positions. (Write # in the space provided).

1. Number of Teachers ________
2. Number of Aides and Assistant Teachers ________
3. Number of Teacher Directors ________
4. Number of Administrative Directors ________
5. Number of Other staff working with children ________

B7. Of those who have left within the last 12 months, how many **fall into** each of the following categories? ***(GIVE THE NUMBER OF PEOPLE IN EACH CATEGORY, LEAVE BLANK IF NONE.)***

	T	AT	TD	D
1. Left voluntarily (employee chose to leave)	____	____	____	____
2. Laid off because of low enrollment	____	____	____	____
3. Laid off for reasons other than low enrollment	____	____	____	____
4. Dismissed for inadequate performance	____	____	____	____
5. Don't know	____	____	____	____

B8. Thinking about the last time you tried to fill a vacancy, **how long was** it from the time the staff member left and a replacement was hired? ***(ENTER THE NUMBER CORRESPONDING TO THE CORRECT ALTERNATIVE FOR EACH CATEGORY OF STAFF.)***

1) Less than 1 week
2) 1 or 2 weeks
3) 3 or 4 weeks
4) More than a month

1. Teacher . . . . [ ]
2. Assistant Teacher/Aide . . . . [ ]
3. Teacher-Director . . . . [ ]
4. Administrative Director . . . . [ ]
5. Other . . . . [ ]

B9. In those cases where it took you three or more weeks to fill the vacancy, which of the following are the primary reasons? **WRITE 1 IN THE BRACKET TO THE RIGHT OF ALL *ANSWERS THAT APPLY.***

1. The pay was too low . . . . [ ]
2. Not enough adequately trained people applied . . . . [ ]
3. Low responses to advertisements . . . . [ ]
4. Offered positions, but candidates accepted jobs elsewhere . . [ ]
5. Wanted to save money, so used a substitute or floater . . . . [ ]
6. Because of normal administrative procedures or problems . . . [ ]
7. Hours offered not a good fit with applicants' needs . . . . . [ ]
8. Problem with where the center is located . . . . [ ]
9. Inadequate benefits . . . . [ ]
10. Other . . . . [ ]

B10. In your most recent hiring, have you offered higher wages than that earned by your present staff who have comparable experience, training, and responsibilities?

YES [1] NO [0]

B11. On average how much did you raise wages and salaries last year? ***WRITE IN THE NUMBER FOR THE CORRECT ALTERNATIVE IN THE BRACKET.***

[ ]

1. no raise
2. 1-3%
3. 3.1-6%
4. over 6%

B11. How many full time equivalent (FTE) staff positions have you added or eliminated in the last year? ***(ENTER THE NUMBER FOR EACH CATEGORY OF STAFF PERSON. IF THE ANSWER IS NONE, ENTER 0). IF FTE'S WERE SWITCHED FROM ONE CATEGORY TO ANOTHER, ADD THE FTE FOR THE APPROPRIATE TYPE AND SUBTRACT FROM THE OTHER. E.G., IF 1 FTE WAS SWITCHED FROM TEACHER TO AIDE, WRITE 1 FOR # FTE ADDED TO AIDE, WRITE 1 FOR # FTE ELIMINATED FOR TEACHER. INCLUDE PARTIAL FTE'S, E.G., .5 FTE FOR AN ADDITIONAL HALF-TIME STAFF PERSON.***

	# FTE Added	# FTE Eliminated
1. Teacher	_____	_____
2. Assistant Teacher/Aide	_____	_____
3. Teacher-Director	_____	_____
4. Administrator/Director	_____	_____
5 . Other	_____	_____
TOTAL FTE	_____	_____

B12. Do teachers and/or assistant teachers/aides in your center work under a collective bargaining agreement negotiated by a union?

YES [1] NO [0]

B13. Working Conditions and Non wage Benefits. Which of the following do you provide for your paid full-time teachers and assistant teachers or aides, and to your part-time employees? ***(ENTER 1 FOR THOSE BENEFITS WHICH ARE PROVIDED. IN THE FOLLOWING LIST, "PAID" MEANS PAID BY THE CENTER.)***

		Full-time		
		Teachers	Asst Teach	Part time
1.	at least partially paid retirement plan	☐	☐	☐
2.	life insurance (whether paid or unpaid)	☐	☐	☐
3.	paid maternity/paternity leave	☐	☐	☐
4.	unpaid maternity/paternity leave	☐	☐	☐
5.	fully paid health insurance	☐	☐	☐
6.	partially paid health insurance	☐	☐	☐
7.	paid health insurance for dependents	☐	☐	☐
8.	at least partially paid dental insurance	☐	☐	☐
9.	paid sick leave or personal leave	☐	☐	☐
10.	paid vacations	☐	☐	☐
11	paid to attend staff meetings and training	☐	☐	☐
12.	compensation for overtime	☐	☐	☐
13.	flexible hours	☐	☐	☐
14.	written job description	☐	☐	☐
15.	written contract	☐	☐	☐
16.	written salary schedule	☐	☐	☐
17.	ability to bring child(ren) to work	☐	☐	☐
18.	reduced child care fees	☐	☐	☐
19.	service awards or bonuses	☐	☐	☐
20.	Paid meals	☐	☐	☐

**SECTION C: INDIVIDUAL STAFF CHARACTERISTICS

INTERVIEWER: NOTE THAT THIS WHOLE SECTION REPRESENTS CRITICAL INFORMATION.

THIS SECTION ASKS FOR SPECIFIC INFORMATION ABOUT EACH PAID STAFF MEMBER WORKING DIRECTLY WITH CHILDREN, INCLUDING THE DIRECTOR AND/OR ANY TEACHER DIRECTORS. USE THE SAME FOUR OR FIVE CATEGORIES OF STAFF AS USED IN SECTION B. IT WILL BE IMPORTANT TO CONSULT THE CENTER'S PERSONNEL RECORDS. IF THERE ARE NONE, ASK THE DIRECTOR TO RELY ON HER/HIS BEST IMPRESSIONS, BUT TRY TO GET THE MOST ACCURATE INFORMATION POSSIBLE. ALL OF THIS INFORMATION WILL, OF COURSE, BE KEPT CONFIDENTIAL.

USE THE TABLE IN THIS SECTION TO LIST THE STAFF MEMBERS BY ROOM. IN THE INITIALS COLUMN FURTHEST TO THE LEFT, IDENTIFY EACH PERSON BY THE INITIALS OF THEIR FIRST AND LAST NAME. IN COLUMN (1) IDENTIFY THE ROOM BY AGE OF CHILDREN. ANSWER QUESTIONS C2 THROUGH C12 FOR EACH STAFF PERSON BY CIRCLING OR WRITING THE CORRECT NUMBER IN THE APPROPRIATE COLUMN. IT MIGHT BE BEST TO FILL OUT THE TABLES SIDE-BY-SIDE WITH THE DIRECTOR. MAKE SURE YOU INCLUDE THE DIRECTOR AND ANY OTHER ASSISTANT DIRECTORS WHO WORK WITH CHILDREN.

IF THERE ARE A LARGE NUMBER OF INTERNS, WORK STUDY STUDENTS, TRAINEES, OR SOME OTHER GROUP OF STAFF WITH SIMILAR CHARACTERISTICS WHO ARE WORKING FOR PAY, DO NOT COLLECT SEPARATE DATA ON EACH PERSON. INSTEAD, AS THE LAST ITEM ON THE TABLE, RECORD INFORMATION ON A TYPICAL PERSON IN THE GROUP. IN COLUMN 10 WRITE THE TOTAL # HOURS WORKED BY THE WHOLE GROUP FOR AN AVERAGE WEEK. IN COLUMN 11 OR 12, WRITE IN THEIR AVERAGE HOURLY PAY. INCLUDE ONLY THE WAGE OR SALARY PAID BY THE CENTER.

C1. Age of Children. Circle each age which applies.
1. < 1 years old
2. 2 years old
3. 3 years old
4. 4 years old
5. 5 years old
6. 6 years old or more

C2. Job Titles/Positions. Circle the number describing the person's title:
1. Teacher
2. Assistant Teacher/Aide
3. Teacher-Director
4. Administrative Director
5. Educational Coordinator
6. Specialist employee (e.g., nurse)

C3. Age. Write in the person's age.

C4. Gender. Circle the correct number.
1. female
2. male

C5. Racial or Ethnic Origin. Circle the correct number.
1. White, non Hispanic
2. White, Hispanic/Latino
3. African-American/Black, non Hispanic
4. African-American/Black, Hispanic/Latino

5. Asian/Pacific Islander
6. Native American
7. Other

C6. Number of Years of School Completed. Write the total number of formal years of school completed, e.g., high school graduate = 12; AA degree = 14; AB/BS = 16; MA = 18; PhD = 20. By formal years of school we mean elementary, high school, and college, not specialized schooling or courses which do not lead to a degree. If the staff member is currently in school, give the number of years completed to the most recent whole year.

C7. Specialized Early Childhood Education. Indicate how the staff person received their specialized formal training in child development, child care, early childhood education. (This does not include on-the-job training.) (FOR EACH STAFF PERSON CIRCLE ALL THAT APPLY.)

1. no training
2. in-service workshops at this center
3. workshops in the community or at professional meetings
4. courses in high school or vocational school
5. CDA training
6. courses in a community college or a four year college
7. AA in early childhood education or child development
8. R. N.
9. BA/BS in ECE, child development, nursing, education, etc.
10. graduate level course(s)
11. graduate degree in ECE, child development, etc.

C8. Experience at This Center. Write the total number of months of experience each person has in this center's program.

C9. Prior Experience in ECE. Write the total number of years experience the staff person has had in child care or some other child-related work prior to joining your staff that is directly relevant to his/her current position. By experience we mean either paid or supervised volunteer work in a group setting, or experience that your state licensing agency considers applicable for purposes of meeting state regulations.

C10. Hours Worked Per Week. Enter the normal number of hours the individual is scheduled and paid to work each week. For salaried staff, include the average number of hours worked/week.

C11, C12. Wage or Salary. Enter the wage or salary in columns 11 or 12. If the staff person earns an hourly wage enter the hourly wage in column 11. If the staff person earns an annual salary (this is usually the case for administrators or managers, possibly teachers), enter the annual salary in column 12. For director-owners with a scheduled salary, include this salary even if it was not all taken.

STAFF INFORMATION

Initials	(C1) Children's Ages	(C2) Job Title	(C3) Age	(C4) Gender 1=fem 2=male	(C5) Race	(C6) Years of school	(C7) Specialized ECCE education
1	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
2	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
3	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
4	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
5	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
6	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
7	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
8	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
9	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
10	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
11	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
12	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
13	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
14	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
15	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
16	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11

STAFF INFORMATION (continued)

Initials	(C8) Months at center	(C9) Prior Experience	(C10) Hours worked per week	(C11) Wage per hour	(C12) Salary per year
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					

STAFF INFORMATION

Initials	(C1) Children's Ages	(C2) Job Title	(C3) Age	(C4) Gender	(C5) Race	(C6) Years of school	(C7) Specialized ECCE ed.
18	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
19	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
20	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
21	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
22	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
23	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
24	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
25	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
26	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
27	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
28	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
29	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
30	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
31	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
32	1 2 3 4 5	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11
33	1 2 3 4 5 6	1 2 3 4 5 6		1 2	1 2 3 4 5 6		1 2 3 4 5 6 7 8 9 10 11

STAFF INFORMATION (continued)

Initials	(C8) Months at center	(C9) Prior Experience	(C10) Hours worked per week	(C11) Wage per hr	(C12) Salary per year
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					

SECTION D: EXPENSES FOR THE LATEST FISCAL YEAR

Now I want to collect information about the center's expenses for your most recent full FISCAL YEAR. We need to know how much you spent on each major category of expenses in order to calculate your total costs. If you have records of last fiscal year's expenses we can get this information from these reports. This information would be on any kind of annual report summarizing costs such as a cash flow statement, audit, profit and loss statement, purchase or expenditure record, operating cost record, or your current annual budget if it shows expenses for the last fiscal year.

This section also includes questions about expenses covered through in-kind donations. Do you have all the records we need to start?

What is the beginning and ending date of the center's last fiscal year?

Month _________, Year___________.

(IF THE CENTER HAS JUST CHANGED ITS FISCAL YEAR SO THAT THE LAST FISCAL YEAR REPORT IS FOR LESS THAN A YEAR, YOU MAY STILL USE THIS INFORMATION IF IT IS FOR 6 MONTHS OR MORE. OTHERWISE, TRY TO COLLECT DATA FOR THE LAST CALENDAR year. If this problem occurs, it will be necessary to identify on the cover sheet this abnormality under the check list of critical data.

OUR OBJECTIVE IN THIS SECTION IS TO ESTIMATE ANNUAL TOTAL COST AND EXPENSES FOR EACH MAJOR COST CATEGORY FOR THE LAST FISCAL YEAR OF CENTER OPERATIONS. IF THE CENTER HAS THE ANNUAL DATA WE NEED, WRITE THE DATA IN THE APPROPRIATE PLACES ON THIS FORM. FOR CENTERS WHICH DO NOT HAVE ANNUAL FIGURES FOR THEIR LATEST FISCAL YEAR, WE WILL HAVE TO COLLECT MONTHLY DATA, OR HELP THE DIRECTOR ESTIMATE MONTHLY EXPENSES IN EACH CATEGORY. THEREFORE, WE HAVE SUPPLIED WORKSHEETS ON WHICH TO RECORD DATA AND MAKE THE NECESSARY ESTIMATES.

FOR CENTERS WHICH ARE PART OF A SYSTEM OF CENTERS, OR ARE PART OF A LARGER ORGANIZATION, COMPLETE FINANCIAL RECORDS MAY NOT BE AVAILABLE AT THE CENTER. THIS MAY BE TRUE FOR CENTERS WHICH ARE PART OF SCHOOL DISTRICTS, UNIVERSITIES, CHAINS, CHURCHES. SOME RECORDS, FOR INSTANCE OF FACILITIES OR OVERHEAD, MAY ONLY BE AVAILABLE AT THE CENTRAL OFFICE. IF THIS CENTER IS SUCH A CASE, AND THE DIRECTOR IS NOT ABLE TO ANSWER ALL YOUR QUESTIONS, ASK HER/HIM FOR THE PERSON OR OFFICE TO CONTACT AND THE TELEPHONE NUMBER TO GET THE REMAINING DATA. WRITE THE NAME AND TELEPHONE NUMBER IN THE SPACE PROVIDED ON THE COVER PAGE. ALSO, NOTE, AS YOU GO THROUGH THIS SECTION, THE DATA YOU WILL HAVE TO OBTAIN FROM THE CENTRAL OFFICE ANDIDENTIFY THIS IN THE CHECK LIST AT THE FRONT OF THIS QUESTIONNAIRE.

PERSONNEL

****D1. WAGES AND SALARIES.** In the *last fiscal year*, what was the total expenditure on wages and salaries for the year, for all staff, including office and kitchen staff, but excluding the employer's share of nonwage benefits (which are included in D3 below), and excluding any people you used as subcontractors. We want to know total wages and salaries for all staff before deduction of taxes. Please include all staff who work with children, administrative staff, and any other categories of employees.

** **TOTAL YEAR'S WAGES** . . . . ________

(INTERVIEWER: IF THE DIRECTOR CANNOT GIVE YOU THIS ANNUAL TOTAL, USE WORKSHEET D1 ON PAGES WKS2 AND WKS3 TO RECORD THE INFORMATION NECESSARY TO CALCULATE THIS TOTAL.)

D2. Do you have a breakdown of total annual wages by types of staff? For instance: ***(READ OFF THE LIST BELOW AND COLLECT ANNUAL FIGURES IF THEY ARE AVAILABLE.)***

Teachers ________
Assistant Teachers/Aides ________
Teacher Directors ________
Floaters and Substitutes (if not contract labor) ________
Specialized Staff Working with Children ________
Administrative Directors ________
Other Administrative Staff ________
Food Preparation Staff ________
Other Noncontract Employees ________

****D3. NONWAGE BENEFITS** What was the center's total expenditure on nonwage employee benefits for the year, for all staff, including office and kitchen staff? Include in this answer only the employer's contribution. You should have included the employees' contributions in the answer to D1. You may have these listed as employee benefits and payroll taxes which is fine. This category includes the types of expenses listed below:

1. FICA or equivalent (only the employer's matching amount)
2. Unemployment insurance (total federal and state insurance costs)
3. Worker's Compensation
4. Disability Insurance
5. Health/Dental/Vision Insurance
6. Life Insurance for Staff

** **TOTAL YEAR'S NONWAGE BENEFITS** . . . . ______

(INTERVIEWER, IF THE YEARLY TOTAL IS NOT AVAILABLE, USE WORKSHEET D3 ON PAGE WKS4 TO COLLECT ANNUAL OR MONTHLY DATA ON EACH SPECIFIC ITEM. CALCULATE THE YEARLY TOTAL AFTER THE INTERVIEW AND RECORD ABOVE.)

****D4. STAFF EDUCATION/TRAINING COSTS** What was the total expenditure for the year for all teaching staff for their education or training? Include the following items:

1. Fees for workshops or non college courses
   Conferences
2. In-service on site
3. Off site fees at college or university
4. State professional or public training
5. Travel allowances (for training only).

(TRY TO GET THE DIRECTOR TO ESTIMATE TRAINING TRAVEL EXPENSES. IF YOU SUCCEED, MAKE SURE THEY ARE NOT DOUBLE COUNTED IN TRAVEL EXPENSES UNDER OPERATING EXPENSES IN D16 BELOW).

**** TOTAL YEAR'S STAFF EDUCATION/TRAINING COSTS** . . . . _________

(INTERVIEWER: IF THE YEARLY TOTAL COSTS FOR EDUCATION COSTS ARE NOT AVAILABLE, USE WORKSHEET D4 ON PAGE WKS5 TO COLLECT EITHER THE ANNUAL SUBCATEGORIES OR MONTHLY DATA ON EACH ITEM. CALCULATE THE YEARLY TOTAL AFTER THE INTERVIEW AND RECORD ABOVE.)

****D5.** If you have staff members whose children are enrolled in the center, please estimate the loss in fee revenue from staff discounts.

****LOST FEES FROM STAFF DISCOUNTS FOR THEIR CHILDREN** . . . . _______

****D6. SUB-CONTRACTORS.** Next, I have some questions about people who work for you on a more irregular basis as sub-contractors. These are the people for whom you do not pay benefits and who operate more independently. Some centers will not have any people who fit in this category. What was your total expenditure on contract workers for the year? You may have contracted out work in the following areas: accounting, legal services, clerical support, substitutes.

**** TOTAL SUB-CONTRACTOR COSTS** . . . . $__________

(INTERVIEWERS: IF SUBCONTRACTORS WERE USED, BUT THE ANNUAL TOTAL IS NOT AVAILABLE, USE WORKSHEET D6 ON PAGE WKS6 TO RECORD THE AVAILABLE DATA TO CALCULATE THE TOTAL FOR THE YEAR. DO NOT RECORD COST OF FOOD PREPARATION HERE. IT IS TO BE RECORDED IN D13 BELOW.)

FACILITIES

The next questions deal with your annual costs for space and the facility the center occupies. We are interested in the parts you pay cash for as well as any in-kind donations related to rent, utilities, maintenance, etc.

(INTERVIEWER: RECORD ONLY THE ANNUAL EXPENSES BELOW. IF DATA ARE ONLY AVAILABLE ON A MONTHLY BASIS, THEN USE WORKSHEET D7 ON PAGE WKS7 TO RECORD MONTHLY DATA AND TO CALCULATE THE YEARLY TOTAL. IF THE CENTER IS PART OF A LARGER SYSTEM, OCCUPANCY COSTS MAY NOT BE INCLUDED IN THE CENTER RECORDS, BUT WILL HAVE TO BE COLLECTED FROM THE CENTRAL OFFICE.)

****D7. BUILDING CASH COSTS.** What were your total annual facilities costs, including the following. *(INTERVIEWER: IF THE SUBCATEGORIES LISTED BELOW ARE AVAILABLE, RECORD THEM IN THE SPACE PROVIDED AS WELL AS THE TOTAL.)*

1. Rent or Mortgage _______
2. Utilities (gas & electric, water, trash removal) _______
3. Repair and maintenance (such as snow removal, lawn service, janitorial service, etc.) _______
4. Other _______

**** TOTAL YEAR'S OCCUPANCY CASH COSTS** . . . . Total $__________

****D8. OCCUPANCY DONATIONS.** Do you use donated space or do you receive any kind of financial help on rent which reduces facility costs below what they would be if you had to pay the market rate?

YES [1] NO [0]

****D9.** *(IF THE ANSWER TO D8 IS YES)* Which of the following is true?

1. All our space is donated . . . . YES [1] NO [0]
2. Part of our space is donated . . . . YES [1] NO [0]
3. We receive a discount on the rent of: square foot/year $_______

D10. *(IF THE SPACE IS DONATED)* Do you know the annual rental value per square feet of the space? *(IF THE INTERVIEWEE DOES NOT KNOW, DON'T ASK FOR A GUESS. WE WILL GET AN INDEPENDENT ESTIMATE.)*

# Square Feet Donated_______

Estimated Rent per square foot _______

****D11.** If utilities are donated, please estimate the annual value of donated utilities. *(WRITE 0 IF THERE IS NO DONATION.)*

Value______

****D12.** If any services are donated, estimate the total annual value. For instance: janitorial, lawn care, snow removal, repairs. *(INTERVIEWER: IF YOU HAVE TO HELP THE DIRECTOR MAKE THIS ESTIMATE, USE WORKSHEET D12 ON PAGE WKS8.*

**** TOTAL ANNUAL VALUE OF DONATED SERVICES** . . . . _______

FOOD SERVICE

This section is about costs for serving meals and snacks to the children. *(INTERVIEWER: OTHER FOOD COSTS INCLUDING THE COST OF FOOD FOR EVENTS LIKE FUND RAISING CARNIVALS AND BOARD MEETINGS SHOULD BE CALCULATED AND INCLUDED UNDER OPERATING COSTS IN D16.)*

****D13.** Please give me the cost of food services, excluding personnel costs (which are included in D2 above) for the last fiscal year.

(INTERVIEWER: CENTERS WILL EITHER HAVE FULL FOOD SERVICE PREPARATION ON SITE, OR THEY WILL HIRE A CATERING SERVICE. IF TOTAL ANNUAL COST IS NOT AVAILABLE, USE WORKSHEETS D13A ON PAGE WKS9 TO RECORD MONTHLY DATA AND CALCULATE ANNUAL COST.)

**** TOTAL FOOD SERVICE COSTS** (excluding cook's wages) . . . . _______

****D14. VALUE OF DONATED FOOD.** Was any food donated to the center during the last fiscal year? If so, what was the total value of donated food for the year? . . . . _______

(INTERVIEWER: IF NECESSARY, USE WORKSHEET D13B ON WKS10 TO COLLECT MONTHLY DATA ON FOOD DONATIONS.)

****D15. INSURANCE.** What was your total annual cost of insurance last fiscal year? Include all forms of insurance: for the facilities which might include liability, fire, theft, flood, earthquake; vehicle; accident for children, staff or others; child abuse, etc. Do not include health insurance or any insurance programs which are part of employee benefits.

**** TOTAL ANNUAL INSURANCE COSTS** . . . . _______

OTHER OPERATING COSTS

Finally, we want to collect data on other operating costs such as the cost of supplies, materials and equipment. For our purposes we will use the following definitions:

> Supplies are consumables that are used up right away.
> Materials are replaced within a year.
> Equipment is something that is repaired, lasts more than 1 year and costs over $100.00.

INTERVIEWER: IN THIS QUESTION WE WANT TO COLLECT THE BALANCE OF COST ITEMS. THE LIST BELOW IS A LIST OF TYPICAL OPERATING COSTS, BUT EACH CENTER KEEPS ITS RECORDS SOMEWHAT DIFFERENTLY. READ THE LIST TO THE DIRECTOR TO INDICATE THE COSTS WE STILL NEED TO COLLECT. USE WORKSHEET D16A TO COLLECT MONTHLY DATA IF THAT IS ALL THAT IS AVAILABLE. MAKE ADDITIONS TO THE LIST BELOW IF NECESSARY. ADD UP THE TOTAL AND RECORD BELOW.

AS PART OF OPERATING COSTS WE WANT TO ESTIMATE THE COST OF EQUIPMENT USED DURING THE YEAR. THE BEST ESTIMATE IS THE TOTAL DEPRECIATION COSTS CHARGED OFF FOR THE FISCAL YEAR. IF THE CENTER CHARGES DEPRECIATION ON EQUIPMENT, WRITE THE AMOUNT IN #6 BELOW. IF THE CENTER DOES NOT CHARGE DEPRECIATION, OR IF IT PURCHASED SMALL PIECES OF EQUIPMENT WHICH IT DOES NOT DEPRECIATE, USE WORKSHEET D16B TO ESTIMATE THE TOTAL VALUE OF THIS EQUIPMENT PURCHASED DURING THE FISCAL YEAR. RECORD THE TOTAL IN #5 BELOW.

DEPRECIATION IS A DOLLAR AMOUNT REPRESENTING A PERCENTAGE OF THE ORIGINAL PURCHASE PRICE WHICH THE CENTER COUNTS AS THE COST OF USING THE PIECE OF EQUIPMENT FOR A YEAR. FOR INSTANCE, IF THE CENTER BOUGHT A COMPUTER FOR $2500 WHICH WILL LAST 5 YEARS, IT SHOULD DEPRECIATE 1/5 OF THE $2500 OR $500 PER YEAR FOR THE FIRST FIVE YEARS. THIS $500 IS PART OF THE COST OF PRODUCTION, REPRESENTING WHAT IT COSTS TO USE THE COMPUTER IN THE BUSINESS.

****D16.** Operating expenses includes the following kinds of items.
(READ OF THE LIST AND RECORD AMOUNTS IF SOME OR ALL ARE ITEMIZED, LIST AND RECORD OTHER ITEMS AND CALCULATE THE TOTAL.

1. Office Supplies ________
2. Children's Program Supplies ________
3. Maintenance Supplies ________
4. Equipment Rental and Maintenance ________
5 Non depreciated equipment ________
6. Depreciation on equipment ________
7. Transportation and Travel ________
8. Telephone ________
9. Postage ________
10. Marketing, Advertising, Public Relations ________
11. Photocopying, Printing, Publications ________
12. Licensing and fees ________
13. Dues and Subscriptions ________
14. Interest Payments and Bank Service Charges ________
15. Miscellaneous ________

****TOTAL ANNUAL OTHER OPERATING COSTS . . . .** ________

D17. DONATED EQUIPMENT In the last fiscal year did the center receive any donated equipment? If you did receive such donations, please give me a list of the donated items. For each item, I'd like to know it's condition and it's replacement value.

(INTERVIEWER: USE WORKSHEET D17 ON PAGE WKS12 TO COLLECT THESE DATA. ASK THE DIRECTOR TO SEE THE ITEMS TO MAKE YOUR OWN JUDGEMENT ABOUT THE CONDITION OF THE ITEM, OR ASK THE DIRECTOR TO EVALUATE IT USING THE PROCEDURE DESCRIBED IN THE WORKSHEET. AFTER THE INTERVIEW USE WORKSHEET D17 TO ESTIMATE THE MARKET VALUE OF DONATED EQUIPMENT. ENTER THE TOTAL BELOW. NOTE: WE NEED THE BEST ESTIMATE OF DONATIONS WE CAN GET. DO THE BEST YOU CAN, BUT DO NOT END THE INTERVIEW BECAUSE YOU THINK THE ESTIMATE IS QUESTIONABLE. JUST KEEP TRACK OF YOUR THOUGHTS BY RECORDING IN THE CHECKLIST AT THE BEGINNING OF THE INTERVIEW QUESTIONNAIRE.)

**** TOTAL VALUE OF DONATED EQUIPMENT** . . . . ________

****D18. DONATED SUPPLIES AND MATERIALS.** In the last fiscal year did your center receive any donated supplies and materials? If so please list each item. For each, give me an estimate of the market value.

(INTERVIEWER: USE WORKSHEET D18 ON PAGE WKS12 TO COLLECT THESE DATA. ENTER ANNUAL TOTAL BELOW. AGAIN, DO THE BEST YOU CAN IN ESTIMATING THE VALUE OF DONATED MATERIALS.)

**** TOTAL VALUE OF DONATED SUPPLIES AND MATERIALS** . . . . ________

****D19. TOTAL ANNUAL OVERHEAD COSTS.**

INTERVIEWER: THIS QUESTION IS RELEVANT ONLY FOR CENTERS WHICH ARE PART OF A LARGE SYSTEM OF CENTERS, OR ARE PART OF A LARGER SPONSORING AGENCY WHICH PROVIDES SERVICES TO THE CENTER.

How much are you charged as overhead costs, as a contribution for the costs of operating your larger system of centers?

**** TOTAL ANNUAL OVERHEAD COSTS** . . . . ____________

**SECTION E: REGULAR VOLUNTEERS

(INTERVIEWERS: NOTE THAT THIS WHOLE SECTION REPRESENTS CRITICAL INFORMATION.

This section asks questions about the use of regular volunteers, both parent and nonparent volunteers at your center who work regularly at least 4 hours per month. If you do not use volunteers in any capacity, skip to Section F.

INTERVIEWER: COMPLETE THE TABLE TO ANSWER THESE QUESTIONS ABOUT EACH REGULAR VOLUNTEER. IN THE LEFT HAND COLUMN ENTER EACH VOLUNTEER'S INITIALS. IF THE CENTER DOES NOT KEEP RECORDS, ASK THE DIRECTOR TO RELY ON HER/HIS MEMORY.

NOTE: IF THERE IS SOME GROUP OF VOLUNTEERS WITH COMPARABLE CHARACTERISTICS (SUCH AS A GROUP OF VOLUNTEER STUDENTS) WHO WORK SIMILAR AMOUNTS PER MONTH, RECORD INFORMATION FOR A TYPICAL PERSON IN THE GROUP. IN COLUMN E4 RECORD THE TOTAL NUMBER OF HOURS WORKED BY THE GROUP FOR A TYPICAL MONTH. IN COLUMN E5 RECORD THE HOURLY WAGE.

E1. Parent or Nonparent. Enter the number which describes the volunteer.
1. Parent of a child enrolled in the center.
2. Nonparent

E2. The volunteer's regular occupation. Circle the number describing the person's work status or occupation:
1. housewife or househusband
2. a student or intern.
3. manager or professional
4. technicians, sales and administrative support
5. services
6. skilled crafts, repair and production worker
7. unskilled operator, fabricator, or laborer
8. farmer, forestry or fishing
9. retired
10. don't know

E3. Nature of Volunteer work performed. Indicate the MAJOR sort of work each person performs for the center by circling the MOST appropriate number.
1. accounting, legal or other technical administrative work.
2. special teaching, e.g., music, art, etc.
3. special professional services, e.g., nursing, social work, medical or psychological examinations
4. works as a teacher in one of the rooms
5. works as a teacher aide in one of the rooms
6. accompanies children on field trips
7. helps raise funds for the center
8. serves on the governing board
9. performs maintenance work such as gardening, cleaning, etc.
10. secretarial or support work
11. works with children with special needs
12. other

E4. Average # Hours volunteered per month. Enter the average amount of hours the person volunteers for your center per month.

E5. Hourly Wage for Volunteered Services. Write the hourly wage you would have to pay for the services the person has volunteered.

DESCRIPTION OF VOLUNTEERS

Initials	(E1) Parent/ Non-parent	(E2) Regular Occupation	(E3) Work at Center	(E4) Hours/ Month	(E5) Hourly Wage
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		

DESCRIPTION OF VOLUNTEERS CONT'D

Initials	(E1) Parent/ Non-parent	(E2) Regular Occupation	(E3) Work at Center	(E4) Hours/ Month	(E5) Hourly Wage
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		

DESCRIPTION OF VOLUNTEERS CONT'D

Initials	(E1) Parent/ Non-parent	(E2) Regular Occupation	(E3) Work at Center	(E4) Hours/ Month	(E5) Hourly Wage
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		
	1 2	1 2 3 4 5 6 7 8 9 10	1 2 3 4 5 6 7 8 9 10 11 12		

**SECTION F PRICES OF MATERIALS

In this section we need to collect some information on the prices you pay for several commonly used items in your center. It will be great if you know or have records of the prices you paid the last time you bought each item. If not, maybe there is someone else at the center who would know. Otherwise, give me your best guess.

Please give me the following information about these 12 items which you purchase. What price did you pay the last time you made the purchase. If you do not use the item, just say so.

F1. Where Purchased. Which of the following best describes the kind of place where the center buys this item or from whom it is supplied if you do not purchase it yourself? ***(RECORD THE NUMBER IN COLUMN F1.)***

1. local retail store
2. local wholesale store
3. regional or national distributor
4. supplied by our sponsoring agency, or purchasing agent.
5. donated
6. don't use

F2. Price. What price did you pay for the item?

F3. Unit. What is the unit size of this purchase price? By the gallon, case (if case, how many of what size per case), dozen, ream, etc.

Item	(F1) Where purchased	(F2) Price	(F3) Unit or package size	(Please leave blank)
milk	1 2 3 4 5 6			
saltines	1 2 3 4 5 6			
paper towels	1 2 3 4 5 6			
napkins	1 2 3 4 5 6			
water color markers	1 2 3 4 5 6			
9 x 12 construction paper	1 2 3 4 5 6			
table-top interlocking plastic blocks	1 2 3 4 5 6			
gasoline	1 2 3 4 5 6			
dishwashing detergent	1 2 3 4 5 6			
photocopying per page	1 2 3 4 5 6			
copy paper	1 2 3 4 5 6			
disposable diapers	1 2 3 4 5 6			

SECTION G: FEES AND SOURCES OF INCOME OR REVENUE

This section asks questions about your fees for services, and the extent to which you offer discounts or serve children who get financial aid from state child care programs. We also ask a few questions about the sources of financial support and your fund raising efforts. If you have any published fee schedule, it may help me. ***(IF THE DIRECTOR HAS A PUBLISHED FEE SCHEDULE ASK FOR A COPY.)***

First, we are interested in learning about fees paid by your clients - parents, and state or county agencies which help pay for child care for low income children. That is, we are interested in the cost to parents or other consumers.

How do you charge tuition to families: hourly, daily, weekly, monthly? ***(CIRCLE THE NUMBER OF EACH RATE USED.)*** Which rate is the rate you use most commonly? ***(CIRCLE THE CORRECT WHOLE ANSWER IN THE LIST.)***

1. Hourly
2. 1/2 day
3. Daily
4. Weekly
5. Monthly

(INTERVIEWER: WE WILL USE MONTHLY FEES TO COMPARE FEES BETWEEN CENTERS. THERE IS A PROBLEM IN PROPERLY REPRESENTING THE CENTER'S FEES USING MONTHLY RATES IF THIS IS NOT THEIR MOST COMMON RATE, AND THIS MOST COMMON RATE CONVERTS INTO A HIGHER OR LOWER MONTHLY RATE THAN THE MONTHLY FEE. FOR INSTANCE, IF THE MONTHLY FEE IS $400/MONTH, AND THE MOST COMMON FEE CHARGED IS A WEEKLY FEE OF $100/WEEK, THE MONTHLY EQUIVALENT OF $100/WEEK = $100 x 4.3 = $430, NOT $400/MONTH.)

IF THE MOST COMMONLY CHARGED FEE IS NOT THE MONTHLY FEE, THEN RECORD THE FEE STRUCTURE ON WORKSHEET G1 ON PAGE WKS13. AFTER THE INTERVIEW YOU SHOULD USE THE WORKSHEET TO CONVERT THE FEES TO THE CORRECT MONTHLY RATE AND RECORD THESE FIGURES IN G1 BELOW. IF THE MOST COMMONLY CHARGED FEE IS MONTHLY, THEN RECORD THE STRUCTURE REPORTED BY THE DIRECTOR BELOW FOR EACH AGE GROUP OF CHILDREN FOR WHICH THE CENTER HAS A PROGRAM.

G1. Please give me the full fee (that is, the highest normal monthly fee paid by parents, not including discounts or special fees) for each age group of children the center serves.

1. Infants Monthly Fee $________
2. Toddlers Monthly Fee $________
3. Older Toddlers Monthly Fee $________
4. Pre School Monthly Fee $________
5. School Age Monthly Fee $________

G2. Approximately what percent of families pay additional fees above the normal rate? *(GET A BALLPARK FIGURE HERE, IF NECESSARY.)*

1. Percent of families paying lunch fees % _____
2. Percent of families paying breakfast fees % _____
3. Percent of families paying diaper or special infant fees (this should be % of families with infants enrolled) % _____
4. Percent of families paying special fees for lessons, etc. % _____

G3. Do you charge higher rates per hour for children enrolled part-time?

YES [1] NO [0]

G4. If fees are higher for part-time children, approximately what per cent of your FTE (full time equivalent, not, number of children) do they represent? *(AGAIN, A BALLPARK ESTIMATE IS OKAY HERE. REFER TO DEFINITION OF FTE CHILDREN IN QUESTION A16 ABOVE.)*

% of FTE made up of part-time children _____

G5. As part of your fee policy, do you provide discounts for certain groups of customers? *(THESE ARE DISCOUNTS TO ATTRACT CERTAIN GROUPS OF CUSTOMERS OR TO PROVIDE A BENEFIT FOR CENTER EMPLOYEES. WRITE 1 TO THE RIGHT OF THE BRACKET FOR ALL THAT APPLY.)*

1. Discounts to 2nd, multiple children enrolled from the same family [ ]
2. Discounts to employees of certain businesses [ ]
3. Discounts to children of your staff [ ]
4. Other (DESCRIBE)________________________________ [ ]

G6. If you enroll children receiving county or state Department of Social or Human Services subsidies, what is the maximum monthly fee per child allowed by the county or state? *(IF THE STATE PAYS BY A DAILY RATE, MULTIPLY BY 21.7 TO GET THE MONTHLY RATE.)*

Infant Monthly Fee per Child . . . . __________

Toddler Monthly Fee per Child . . . . __________

Preschool Monthly Fee per Child . . . . __________

School Aged Monthly Fee per Child . . . . __________

G7. Do you charge fees based on a sliding fee scale (based on family income) for low-income children not subsidized by the county or state?

YES [1] NO [0]

G8. Do you offer some other kind of special help to low-income children? YES [1] NO [0]

(IF THE DIRECTOR ANSWERED "YES" TO G7 OR G8, ASK THE QUESTION BELOW.)

G9. How do you finance these subsidies? ***(WRITE 1 IN THE BRACKET TO THE RIGHT OF ALL THAT APPLY.)***

1. from center profits or from fee revenue from other children [ ]
2. funds from our sponsoring agency (church, university, corporation, etc.) . . . . [ ]
3. outside funding from local foundations, businesses, etc. . [ ]

****G10.** How many FTE children are there in your entire program who have tuition paid fully or in part by a government or other agency. We are interested in the total number of FTE slots taken up in your center by children served by agencies such as the State or County Department of Social or Human Services, Head Start, a Public Schools based program, United Way, your sponsoring agency, etc. Do not include children whose parents receive a regular discount.

**** TOTAL NUMBER FTE SUBSIDIZED CHILDREN FROM ALL SOURCES** ____________
(except regular discounts on fees)

G11. Identify any of the following activities you use routinely to help finance the center? ***(WRITE 1 IN THE BRACKETS THAT APPLY.)***

1. Membership campaign . . . . [ ]
2. Center Board sponsored fund raising events . . . . [ ]
3. Parent sponsored fund raising events . . . . [ ]
4. Grant requests from local philanthropic groups . . . . [ ]
5. Small events like bake sales, garage sales, etc. . . . . [ ]
6. Outreach to local community groups and businesses . . . . . . [ ]
7. Grant requests to local, state, federal Governmental agencies . . . . [ ]
8. Parent volunteering . . . . [ ]
9. Participation in local United Way or Community Fund Drive . . . . [ ]
10. Private donations . . . . [ ]

G12. Please estimate the total number of hours devoted, on average, annually by you and your staff to fund raising activities. ***(RECORD HOURS FOR EACH TYPE OF STAFF TO HELP GET A BETTER ESTIMATE OF THE TOTAL.)***

# Hours per Year
The director . . . . ________
Other administrative . . . ________
Teaching staff . . . . . . ________

TOTAL # HOURS PER YEAR DEVOTED TO FUND RAISING . . . . ________

G13. When did you last increase your fees? Month_________ Year______

G14. The last time you raised your fees, what was the average percentage increase?

Percent increase in fees______

G15. Do you plan to increase your fees in the next six months?

YES [1] NO [0]

SECTION H: TOTAL ANNUAL INCOME AND REVENUE

In this section I will ask for the information necessary to understand the total income and revenue the center received in its last fiscal year.

H1. In the last fiscal year, how much cash did you earn or take in from the following sources?

REVENUE SOURCES . AMOUNT OF INCOME

1. Program service fees paid by parents . . . . ________
2. Program service fees paid by the State or County Department of Social or Human Service . . . . ________

**3. U.S.D.A. Child Care Food Program . . . . ________

4. Subsidies or contributions from local community groups such as the United Way, Kiwanis, etc. . . . . . . ________
5. Cash contributions from your corporate, church university, school sponsor, or membership . . . . ________
6. Municipal, State, or Federal Government contributions other than shown in (2) above . . . . ________
7. Special events and fund raising efforts . . . . ________
8. Cash contributions from parents' employers . . . . . . ________
9. Private donations . . . . ________
10. Investment income . . . . ________
11. Other (2)____ . . . ________
12. Other (3)____ . . . ________

TOTAL . . . . ________

H2. *(For proprietors only)* How do you receive personal income from this business *(Write 1 in all that apply)*

1. By taking a salary [ ]
2. By taking a draw from the business [ ]
3. By getting a rate of return on the business [ ]
4. By receiving rent for the facilities [ ]
5. Other [ ]

SECTION I: PHYSICAL SPACE

This is the final section of the interview. I have a couple questions about the physical square footage of the center. If you do not know these measurements, with your permission, I would like to be able to take a few minutes to make the measurements,

****I1.** On which floors is the center located?
If the center occupies a **basement**, write **0**.
If the center occupies the **1st floor**, write **1**.
If the center occupies **1st and 2nd floors** write **12**.
If the center occupies a **basement and the 1st floor** write **01**

____

****I2.** What is the total inside square footage occupied by the center? (Including the kitchen, mechanical equipment room, reception area, administration space, etc.) **(NEEDS TO BE MEASURED IF NECESSARY.)**

____

****I3.** What is the total square footage of rooms used by children? (Includes areas used exclusively for child care activities. Does not include areas for built-in furniture, infant cribs, store closets and toilet facilities.) **(NEEDS TO BE MEASURED IF NECESSARY.)**

____

****I4.** What percentage of the child activity space is a basement space? (e.g. write 20 for 20 percent).

____

****I5.** What is the total square footage of outdoor play areas used by children? **(NEEDS TO BE MEASURED IF NECESSARY.)** ________

INTERVIEWER: THE REMAINING QUESTIONS IN THIS SECTION ARE QUESTIONS FOR YOU TO ANSWER FROM YOUR OWN OBSERVATIONS OF THE CENTER. IF YOU HAVE TO MAKE MEASUREMENTS OF THE CENTER YOU CAN WATCH FOR THESE ITEMS. YOU SHOULD ASK THE DIRECTOR IF YOU CAN LOOK AROUND THE FACILITY TO CHECK ON A FEW QUESTIONS ABOUT FACILITIES. IF NECESSARY YOU CAN SUMMARIZE WHAT YOU WILL BE LOOKING FOR.

I6. What is the total square footage of the weather-proof section of the outdoor play area? (This is the area protected from sun and rain).

____

I7. Are the wall treatments of the child activity rooms and toilet facilities soil resistant and easily cleaned (such as ceramic, vinyl or formica wall coverings)?
YES [1] NO [0]

I8. Does every room (other than the bathrooms) normally occupied by children have at least one outside window or door for emergency rescue or venting?
YES [1] NO [0]

I9. Do the child activity areas use a mixture of natural and fluorescent or incandescent lighting? YES [1] NO [0]

I10. Are the electrical receptacles in
either at least 4 ft 6 inches abo

I11. Do the rooms have automatic fire

I12. Do the mechanical equipment rooms
access by maintenance personnel w
exterior child activity spaces?

I13. Do diaper changing areas, toilet
ventilation?

I14. Is the temperature in indoor chil
(winter) and 78° F.(summer)?

I15. Which one of the below best descr
area of the center? (Write the nu
bracket.)

1. Freshly painted, very organi
doctor's office.
2. Freshly painted, clean, but
3. Cluttered, but not dirty.
4. Messy and dirty.

I16. Do you notice any undesirable odo
diaper change area)?

I17. On a scale from 1 (poor) to 5 (ve
teachers' appearance (grooming) a

I18. On a scale from 1 (poor) to 5 (ve
directors' articulateness?

I19. Do you see amenities pertaining t
coffee and cookies)?

receptacles in child activity spaces child safe -
t 6 inches above the finish floor or capped?

YES [1] NO [0]

utomatic fire and smoke alarms?

YES [1] NO [0]

quipment rooms open directly to the exterior for
ce personnel with no access into any interior or
vity spaces?

YES [1] NO [0]

areas, toilet facilities and kitchen have proper

YES [1] NO [0]

in indoor child activity areas around 68° F.
(summer)?

YES [1] NO [0]

low best describes the entrance and the reception
(Write the number of the best answer in the

[ ]

d, very organized, and as spotless and shiny as a
e.
d, clean, but not extremely shiny or organized.
not dirty.
y.

ndesirable odors (possibly from the kitchen or
?

YES [1] NO [0]

poor) to 5 (very good) how do you rate the
e (grooming) and presentation?

[ ]

poor) to 5 (very good) how do you rate the
teness?

[ ]

s pertaining to parents (such as a library or free
?

YES [1] NO [0]

J. FOR INTERVIEWER'S USE ONLY, AFTER COMPLETION OF THE INTERVIEW

J1. **ASSESSMENT OF THE QUALITY OF FINANCIAL DATA COLLECTED.** Please evaluate the quality of the cost and income data you have just collected. Which of the following assessments best describes the quality?

1. **Very good.** The center maintains complete records and most data was collected from these records . . . . ☐
2. **Reasonably good.** For instance, year-end cost summaries were not available, but I collected monthly data from well maintained records and I am reasonably confident about estimates we had to construct from recollection . . . . ☐
3. **Poor.** The center does not have complete records for the whole fiscal year. In many cases we had to make year end estimates from incomplete monthly estimates and recollection, about which I am not very confident . . . . ☐

J2. If you answered (3) to the above questions, check the subcategories of data which are most problematic. If all were, check them all.

1. Wages and hours of staff . . . . ☐
2. Personnel costs . . . . ☐
3. Occupancy costs . . . . ☐
4. Food Service costs . . . . ☐
5. Operating Costs . . . . ☐
6. In-kind Donations . . . . ☐
7. Income data . . . . ☐
8. Other (Please Specify)____

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COST, QUALITY AND CHILD OUTCOMES IN CHILD CARE CENTERS

PUBLIC REPORT
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Cost, Quality, and Child Outcomes in Child Care Centers

Public Report
April, 1995

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The opinions in this report are those of the Cost, Quality and Outcomes Team and do not necessarily reflect the views of any of the funding foundations, advisors, or consultants.

Summary

Every day, five million American children attend child care. Indeed, forty percent of all American youngsters spend some of their preschool months in child care. As child care has become essential to our nation's children and their families, fresh; clear knowledge about child care quality, costs, and child outcomes is increasingly necessary.

To that end, Cost, Quality, and Child Outcomes in Child Care Centers, provides a comprehensive study of center child care in four states: Los Angeles County, California; the Front Range in Colorado, the New Haven/Hartford corridor in Connecticut, and the Piedmont Triad in North Carolina. Researchers from the University of Colorado at Denver, the University of California at Los Angeles, the University of North Carolina at Chapel Hill, and Yale University collected and analyzed data during 1993 and 1994. In total, data were collected from 401 centers and 826 preschool-aged children attending a subsample of these centers.

In the research design, we deliberately designed an intensive, on-site study of centers in four fairly representative states with varying licensing standards and demographic and economic characteristics. Taken together, our results give a national overview. Individually, the results for a given state are representative of other states with similar characteristics.

FINDINGS

The Quality of Services

- Child care at most centers in the United States is poor to mediocre, with almost half of the infant and toddler rooms having poor quality.
- Only one in seven centers provides a level of quality that promotes healthy development. Child care in one in eight centers threatens health and safety. Seven in ten centers are providing mediocre care which may compromise children's ability to enter school ready to learn. Infants and toddlers fare worse. Forty percent of the infant and toddler rooms were observed to endanger children's health and safety. Only one in 12 infant and toddler rooms are providing developmentally appropriate care.
- The quality of child care is primarily related to higher staff-to-child ratios, staff education, and administrators' prior experience. In addition, teachers' wages, their education and specialized training were the most important characteristics that distinguish poor, mediocre, and good-quality centers.
- States in this study with more demanding licensing standards have fewer poor-quality centers; centers that comply with additional standards beyond those required for basic licensing (such as those required for funding or accreditation) provide higher quality services.
- Centers with extra resources used them to improve quality.

As child care has become essential to our nation's children and their families, fresh, clear knowledge about child care quality, costs, and child outcomes is increasingly necessary.

The quality of child care is positivily associated with developmental outcomes for children across all levels of the mother's education...

Child Outcomes and Their Relation to Center Quality

- Children's cognitive and social development are positively related to the quality of their child care experience. Compared to children in lower quality settings, children in higher quality classrooms displayed more advanced language development and pre-math skills, had more advanced social skills, had more positive attitudes toward their child care experiences, and had warmer relationships with their teachers.

- The quality of child care is positively associated with developmental outcomes for children across all levels of the mother's education. In some cases child care quality was even more strongly related to the outcomes of children at risk.

Cost, Revenue and Support

- Center child care—even mediocre care—is costly to provide. Donations—including goods, space, volunteer hours, and foregone wages of workers—account for more than one-fourth of the full cost of care.

- Good-quality services cost more than mediocre-quality services, but not a lot more.

- Center enrollment affects costs. Cost per child hour decreases with the increase in total child hours provided and more intensive use of the *existing space*. Also, there are economies of scale for larger centers.

- Cash payments from government and philanthropic sources represent about 28% of center revenue, with the remainder coming from parent fees.

Sector Comparisons

- While there are differences between nonprofit and for-profit centers, their overall quality is not significantly different, except in the one state with low licensing standards.

- Within each sector, particularly in the nonprofit sector, there are variations by sub-sector in center characteristics and overall quality.

- These findings suggest that it is difficult to associate any given level of quality with sector overall; rather, levels of quality may be more clearly aligned with sub-sectors.

- On average, both nonprofit and for-profit centers seem equally efficient in their allocation of resources in the sense that the variable cost per child hour is not significantly different for centers with similar enrollment and quality.

The Competitive Environment

- Characteristics of the market—competition and subsidy dependence—affect center finances, with nonprofit and for-profit centers facing different competitive conditions that affect their performance.

- Although parents report that they value good-quality care, they substantially overestimate the quality of care their children are receiving. This lack of consumer knowledge and the fact that there is little difference in fees in centers providing high- and low-quality care suggest that there is little financial incentive for centers to improve quality.

RECOMMENDATIONS

The main recommendation of the study is that the country must commit to improving the quality of child care services and to improving access to good-quality child care programs. The study identifies key initiatives that will be necessary to improve child care quality:

- Parents need to have better tools to identify good quality child care;

- States should implement higher quality child care standards;

- The nation needs to increase its investment in child care staff;
- Government, business and private philanthropies need to increase their investments to help families pay for the cost of good-quality child care, and those investments need to be tied to incentives to increase quality.

ORGANIZATION OF THIS REPORT

This study is unique in its cross-disciplinary approach to investigating child care provision. Our team included economists, developmental psychologists, development and early childhood educators. The research questions asked and our findings were informed by this cross-disciplinary perspective along with the perspectives of our Technical Advisory Committee. In particular, our intent has been to broaden the scope of inquiry to investigate how the structure of the industry and market competition affect the cost and quality of center child care. The first chapters in this report orient the reader to our approach. Chapter One outlines the study methodology. Chapter Two briefly discusses the economics of the center child care industry. Chapter Three presents the conceptual structure used to describe the functioning of child care centers, the relation between the cost and quality of services, and the effects of services on children's development.

Chapters Four through Seven present study results summarized in thirteen major findings. The chapters are organized by category of finding. Chapter Four describes findings related to center quality and the relation between center quality and child outcomes. Chapter Five describes findings related to center finances—costs, the cost-quality relation, and the impact of donations and other subsidies on costs and parent fees. Chapter Six compares the characteristics of the for-profit and nonprofit sectors of the market and compares their performance with respect to cost and quality of services. Chapter Seven reports on the competitive characteristics of the industry and on results about the demand for quality child care. Finally, Chapter Eight pulls together major findings and makes public policy recommendations which flow from these findings.

...the country must commit to improving the quality of child care services and to improving access to good-quality child care programs.

Chapter 1
Study Background and Methodology

Early care and education (ECE) serves at least two different functions: (1) freeing parents, primarily mothers, to enter the paid labor force, and (2) fostering the physical, emotional, cognitive, and social development of children. This study finds that the second function is not well met, falling far below a satisfactory level. Each function is addressed below.

More and more women, many with small children, are being drawn into the paid labor force, some for the satisfactions of working outside the home, many from economic necessity. The number of child care facilities has increased to meet the demand. In 1990, half of all four-year-olds and 27% of all three-year-olds in the United States were enrolled in some kind of early childhood program. Center care represents an increasing share of out-of-home child care, particularly for preschool children. In a recent study, close to half of employed mothers and one third of unemployed mothers of three and four year olds reported center care as their main child care arrangement (Willer, Hofferth, Kisker, Hawkins, Farquhar, & Glantz, 1991).

Studies show that much of the ECE services children receive in centers and in family child care does not promote their cognitive, social, and physical development (Whitebook, Howes, & Phillips, 1989; Galinsky, Howes, Kontos, & Shinn, 1994; Clifford, Russell, Fleming, Peisner, Harms, & Cryer, 1989; Cryer, Clifford, & Harms, 1988; Kisker, Hofferth, Phillips, & Farquhar, 1991). Nevertheless, there is considerable evidence from previous research that good-quality ECE can make a difference in the developmental outcomes of children. It has been used successfully to prepare "at-risk" children for entry into school. Compared with children in poor-quality ECE programs, children from low-income families who attended high-quality programs have higher IQs during early childhood (Burchinal, Lee, & Ramey, 1989; Lazar, Darlington, Murray, Royce, & Snipper, 1982), middle childhood, and through adolescence (Campbell & Ramey, 1994), better academic outcomes (Campbell & Ramey, 1994; Hayes, Palmer, & Zaslow, 1990; Lazar et al., 1982; Schweinhart & Weikart, 1980) and became more productive citizens as adults (Berrueta-Clement, Schweinhart, Barnett, & Weikart, 1984). Furthermore, there is evidence that children from both middle-income and low-income families who attend good-quality centers have better social and intellectual development (Doherty, 1991). The 1994 Carnegie report, *Starting Points: Meeting the Needs of Our Youngest Children*, documents the importance of early stimulation to the development of children's brain structure, ability to learn, and moral reasoning. It argues, however, that the current, fragmented ECE institutional arrangements cannot guarantee the quality of services necessary for children's healthy development (Carnegie Corporation of New York, 1994).

Cost, Quality, and Child Outcomes in Child Care Centers was undertaken to increase our knowledge of the operation of child care markets to help explain existing levels of quality of care. Because the economics of the child care industry is not well understood, this study combined the expertise of child development professionals in measuring quality with the skills of economists in measuring cost. The analysis of these data provides insights into the dynamics of the market that inhibit centers from providing better care. It compares the performance of both for-profit and nonprofit centers. It describes a

> ***Cost, Quality, and Child Outcomes in Child Care Centers was undertaken to increase our knowledge of the operation of child care markets...***

It is based on a study of 401 child care centers during the spring of 1993 and a sample of 826 preschool children who attended these centers.

competitive industry with low profit margins and with little financial incentive to improve quality. In explaining why the quality of most care is poor to mediocre, it points to ways in which investment can improve the developmental outcomes of young children to help ensure their ability to begin school ready to learn.

The Cost, Quality, and Child Outcomes Study focuses on the relationship between the cost and quality of child care in centers providing full-time services, as well as the effect of center quality on children's developmental outcomes. It is based on a study of 401 child care centers during the spring of 1993 and a sample of 826 preschool children who attended these centers. Approximately 100 centers were studied in each of the following locations: Los Angeles County, California, the Front Range region of Colorado (Colorado Springs, Denver, Fort Collins), the Hartford-New Haven corridor in Connecticut, and the Piedmont Triad area in North Carolina (Greensboro, Winston Salem, and High Point).

The study has involved the collaboration of early childhood experts and economists at four universities: Suzanne Helburn, Mary Culkin, Naci Mocan, and John Morris at the University of Colorado at Denver; Carollee Howes and Leslie Phillipsen (currently on the faculty of The University of Memphis) at the University of California at Los Angeles; Debby Cryer, Ellen Peisner-Feinberg, Richard Clifford, Peg Burchinal, and Donna Bryant at the Frank Porter Graham Child Development Center at the University of North Carolina at Chapel Hill; and Sharon Lynn Kagan and Jean Rustici at Yale University.

The questions addressed by the study include:

- What is the relation between cost and quality of center child care?
- How is the quality of child care center environment related to children's cognitive, language, and social skills?
- Are there differences in the relationship between child care quality and developmental outcomes for children from different backgrounds?
- What can we learn about the relative importance of staffing ratio, group size, qualifications of staff, staff turnover, and quality of administration and leadership on the overall quality of services?
- How do licensing standards and regulations affect cost, quality, and service delivery?
- How do changes in wages of different categories of staff affect center decisions about the mix of staff to employ?
- What are the differences in practices between for-profit and nonprofit centers, and how do they affect the cost of providing care and quality of services?
- Can larger or more intensively used centers provide the same quality services at a lower cost of provision per child than smaller or less intensively used centers?
- What are the economic advantages and disadvantages to centers in providing services to all age groups of children versus only one or two age-groups? In economic terms, is there a most efficient mix of age-groups and enrollment size?
- Which types of centers perform most efficiently in terms of the cost of providing services of a specific level of quality?
- How effective are parents in monitoring the quality of care?
- What public policies are suggested by these findings?

STUDY METHODOLOGY

The four-state team collected cost and quality data through visits during the spring of 1993 to approximately 50 randomly chosen for-profit centers and 50 randomly chosen nonprofit centers in each of the four locations[1]. The study included only state-licensed child care centers offering services at least 30 hours per week, 11 months per year.[2] This includes programs such as Head Start and public school sponsored preschool programs as long as the programs provided full-time care as defined in this study. They had to have been in operation at least one full fiscal year immediately prior to this study, and the majority of children had to attend at least 30 hours and five days per week. Table 1.1 shows the number of centers in the sample by sector, auspice, and other categories of interest.

In this report, we use "sector" to distinguish between nonprofit and for-profit centers. We use "auspice" to refer to the subsectors within the nonprofit and for-profit sectors, for instance, independent nonprofit, church-affiliated nonprofit, etc.

A total of 228 infant/toddler classrooms and 521 preschool classrooms were observed to collect information about process quality. For purposes of this study infant/toddler rooms were defined as those where a majority of children were less than two-and-a-half years old. Preschool classrooms were defined as those where a majority of children were at least two-and-a-half years old but not yet in kindergarten. At each center, two classrooms were randomly chosen, one preschool and one infant/toddler room if the center served both age groups. No school-age classrooms or kindergarten classrooms were observed.

In addition, we studied the developmental outcomes of children in their next-to-last year of preschool who were attending a subsample of observed preschool classes. A total of 826 children (approximately 200 per state) from 181 centers were included in this phase of the study. During the summer of 1993, individual assessments of the children were conducted at the centers by trained observers. Teachers completed ratings about each child, and parents provided demographic information about their families. The same children were assessed again at the end of preschool, and at the end of their kindergarten year in 1995 in the longitudinal continuation of this study.

MEASURES

Data collectors obtained in-depth financial information on center costs, amounts and sources of revenue, and sources of donations through on-site interviews and reviews of center records with center administrators or owners. They also collected data on program characteristics, including total attendance, enrollment and maximum licensed capacity of infants, toddlers, preschoolers, and school-age children; staff-to-child ratios; group size; number of publicly subsidized children; operating

Table 1.1

Number of Centers in the Sample by Auspice and Special Categories

	CA	CO	CT	NC	All
Auspice:					
Nonprofit Centers	51	50	49	50	200
Independent	20	28	27	21	96
Church Affiliated	23	17	15	21	76
Publicly Operated	8	5	7	8	28
For-profit Centers	49	50	52	50	201
Independent	29	26	41	28	124
Worksite Independent	1	0	3	0	4
Local Chains	11	7	3	4	25
National Systems	8	17	5	18	48
Special Categories:					
Publicly Supported	5	12	13	16	46
Publicly Supported with Funds Tied to Higher Regulations[2]	3	11	8	8	30
Worksite[3]	2	0	7	7	16
Accredited	4	10	15	2	31

1. Publicly operated centers included centers at public colleges, universities/schools, hospitals and centers operated by municipalities.
2. Higher Regulation category includes Head Start programs, public school preschool programs, and programs with at least 20% of the FTE enrollment in special needs children.
3. 12 worksite centers are nonprofit and 4 are for profit.

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[1] Response rates were 68% in Colorado and Connecticut, 44% in California, and 91% in North Carolina. In general we found no response bias with respect to sector, age groups served, size, when the center opened, and zip code.

[2] In North Carolina this includes some centers operated by churches that must meet health and safety requirements but are exempt from other standards related to staffing.

hours; ownership; services and programs offered; parent participation; personnel policies; volunteer services; and fee schedules and policies. Finally, they provided information on the education, training, demographic characteristics, and wages of each staff person working directly with children. Table 1.2 describes the programmatic and other characteristics of the centers.

In each state, pairs of observers—who were trained in a week-long intensive program—visited each center for one day (from 8:30 a.m. to 3:00 p.m.) to observe two randomly selected classrooms. They used two well-established global observation instruments to comprehensively assess the day-to-day quality of care provided for children: the Early Childhood Environment Rating Scale (ECERS) (Harms & Clifford, 1980) and its infant/toddler version, the Infant/Toddler Environment Rating Scale (ITERS) (Harms, Cryer, & Clifford, 1990). The ECERS is a 37-item scale organized under seven categories: personal care routines, furnishings and display for children, language-reasoning experience, fine and gross motor activities, creative activities, social development, and adult needs. Each item is scored on a seven point scale from inadequate to excellent. The ITERS is a similar instrument designed to assess center rooms for children from birth through 30 months of age.

Table 1.2

Description of the Center Sample

Characteristic:	Mean	SD
FTE Enrollment	70	47
Proportion of FTE Infants/Toddlers	0.22	0.23
Proportion of FTE Preschoolers	0.60	0.25
Proportion of FTE School Age Children	0.18	0.19
Ratio of Actual to Maximum Legal Enrollment	0.82	0.20
Proportion of Centers with Waiting List	0.68	.
Years in Operation	13	12
Hours Open per Day	11	1
Proportion of Subsidized Children	0.23	0.32
Proportion NAEYC Accredited	0.08	.
Proportion of Children White, not Latino	0.66	.
Proportion of Staff White, not Latino	0.70	.
Director's Education in Years	16	2
Director's Prior ECE Experience in Years	8	7
Proportion with Part-day Program	0.79	.
Proportion with Before and After School Care	0.60	.
Proportion with Summer Camp	0.49	.
Inside Square Footage	4940	4088
Inside Square Footage Used by Children	3617	2951
Inside Square Footage per Child	82	68
Proportion of Centers with Volunteers	0.39	.
Volunteer Hours per Month	125	224
Value of Volunteer Hours per Month	$ 310	$ 367
Percent Change in Enrollment Last Year	+ 7%	26
Net FTE Staff Positions Added in Last Year	0.80	2.00

1: Mean is for the 157 centers using volunteers, or 39% of the sample

In addition, observers used two instruments designed specifically to measure teacher involvement: the Caregiver Interaction Scale (Arnett, 1989), which measures the lead teacher's sensitivity, harshness, degree of attachment, and permissiveness; and the Teacher Involvement Scale (Howes & Stewart, 1987), which measures the amount and quality of teacher-child interactions. For all four instruments tests of interrater reliability at each site and between sites were very high.

Based on a principal components analysis, for each center, the results of the ECERS, ITERS, Caregivers Interaction Scale, and Teacher Involvement Scale were combined for the two classrooms into an overall quality index. The center quality index is an average of the scores of the two rooms studied in the center, weighted by the percent of preschoolers and percent of infant/toddlers in the center. The quality index is scaled from 1 to 7, from lowest to highest quality, to conform to the scaling used in the ECERS and ITERS instruments (see Chapter Four for a description of the scale).

Observers counted classroom staffing ratios and group size five different times throughout the day. They also used the Observations of Activities in Preschool instrument to document periodically throughout the day the teacher's role in activities, how children were grouped, the kinds of activities, and the form of expression used during the activity (Palacios & Lera, 1991). Finally, they used the UCLA Early Childhood

Observation Form to differentiate between didactic, structured, and child-centered programs based on five scales: child initiation, academic emphasis, performance pressure, discipline, and negative evaluation (Stipek, Daniels, Galuzzo, & Milburn, 1992).

Staff persons in the sampled rooms completed questionnaires regarding their own families and their work experience. Lead teachers in each sampled room completed questionnaires on the administrative effectiveness at the center in terms of level of organization, administrator's involvement with different parts of the program (Culkin, 1993b). Administrators also provided information on their educational background and allocation of their time while on the job (Culkin, 1993a). Parents in the sampled rooms were asked to complete questionnaires focusing on the value they placed on aspects of child care observed in the study, and on their assessment of the quality of these aspects of care in their children's classrooms. Table 1.3 describes the demographic characteristics of the parent respondents.

The developmental outcomes phase of the study included individual child assessments, teacher ratings, and parent surveys. Each child was seen individually at the center for about 30 minutes to administer several assessment instruments. Receptive language ability was measured using the Peabody Picture Vocabulary Test-Revised (Dunn & Dunn, 1981). The Woodcock-Johnson Tests of Achievement-Revised (Woodcock & Johnson, 1989, 1990) were used to examine pre-reading skills (letter-word identification subtest) and pre-math skills (applied problems subtest). Children's attitudes toward child care and perceptions of competence were measured using the Attitudes/Perceptions of Competence Scale (Stipek, 1993).

Teacher ratings were collected using two instruments. Three aspects of children's social skills were measured by the Classroom Behavior Inventory (Schaefer & Edgerton, 1976), including positive behavior, sociability, and problem behaviors. The Student-Teacher Relationship Scale (Pianta, 1992; Pianta & Steinberg, 1992) measured global aspects, both positive and negative, of the teacher-child relationship.

Finally, parents completed demographic surveys on family and child characteristics. These included level of maternal education, child gender, and child ethnicity (African-American, Asian-American, Latino, White/non-Latino, and other). Table 1.4 describes the child outcomes sample. Child care quality was measured by using the quality index based on scores for the preschool classroom only.

STATISTICAL ANALYSIS

Mean Comparisons. All measures of cost, quality, personnel characteristics, center program characteristics, revenue,

Table 1.3

Characteristics of Respondents to ITERS/ECERS Parent Questionnaires

Respondent Characteristics	Infant / Toddler (N = 727)	Preschool (N = 2407)
Relationship to Child:		
Mother	90%	85%
Father	6	8
Other	4	2
Race:		
White	81%	71%
Nonwhite	18	27
African-American	8	11
Hispanic	4	7
Asian or Pacific	2.5	4
Native American	1.5	2
Marital Status:		
Married	78%	70%
Single	20	28
Education Completed:		
Less than High School	4.9%	2.7%
High School Degree	11.7	14.5
Some College	32.2	38.7
2-Year Degree	10.5	12.6
At Least Bachelor's	50.9	42.9
Mean Age in Years	31	33.5
Mean Annual Family Income	$57,134	$56,797

Failure of categories to total 100% is due to either nonresponse or rounding error.

fees, etc., were studied descriptively to determine whether there were reliable differences related to state, profit sector, or three measures of program scope: the proportion of center full-time equivalent (FTE) children who were subsidized, the proportion who were infants/toddlers, and whether the center offered a before-school and after-school program. A selected number of measures were studied to determine mean differences by subsectors and state. Depending on the measure, analysis of variance or covariance or Chi-square tests were performed to identify significant differences in means by each of the categories identified above. In the following chapters, we refer to these analyses as the descriptive results.

Econometric Estimation of a Short-Run Cost Function. For the whole sample and for each sector of the industry, we estimated multiproduct translog cost functions. These were estimated as short-run cost functions, that is, they describe changes in variable cost due to variation in the number of hours of services provided, assuming that the center facilities do not change. In this study total variable cost included all cash costs incurred by the center except for facilities costs, plus the estimated value of in-kind donations and of owner-operator salaries. In this study, the function included the hours of service provided for infant/toddlers, preschoolers, and school-age children. It also included wages of three categories of staff categorized by amount of education, the size of the physical plant, the number of volunteer hours, and quality of child care (measured by the quality index described above). To capture efficiency differentials due to other center characteristics, dummy variables were included to represent center attributes.

Statistical Analysis of Quality of Services. Because of the cross disciplinary nature of this research and the need to honor the different research traditions represented within our research team, three different procedures were employed to analyze factors affecting overall center quality. First, we used econometric estimation of a quality production function using ordinary least squares (OLS) where the center quality index is explained by standard structural inputs such as staff-to-child ratio, group size, staff education, experience, and tenure at the center; the types of programs offered by the center, as well as variables capturing center-specific characteristics such as auspice, enrollment, percent minority staff, public support; administrator's qualifications and staff perception of the administrator's effectiveness. Where appropriate, both linear and quadratic terms were included. This function not only identifies important determinants of quality but estimates the magnitude of contribution the factor contributes to providing quality.

Second, we performed an hierarchical regression analysis to identify the relative contributions of characteristics of the teachers, classrooms, centers, and administrators in explaining child care quality. In this analysis, insofar as possible, we used the same independent variables (or predictors) as in the econometric

Table 1.4

Children in the Child Outcomes Sample

Category	Total
Number of Children Assessed	826
Center Attendance by Sector:	
For-profit	44.8%
Nonprofit	55.2
Child Gender:	
Girls	48.3%
Boys	51.7
Child Ethnicity:	
White (not Latino)	67.9%
African-American	15.3
Latino	5.5
Asian or Pacific Islands	3.8
Other	7.5
Mother's Educational Level:	
Less than High School	2.4%
High School Degree	16.7
Some College	43.8
At Least Bachelor's Degree or more	37.2

estimation. Attention was paid to selecting factors that were not highly correlated to enhance the interpretation of the results. The analysis involved two steps. First, the simple correlations were computed between the overall quality index (the dependent variable) and each predictor measure. Second, the hierarchical regressions were performed in which seven sets of predictors were added to the regression model in successive analyses starting with those factors that most directly affect the child and ending with those factors most removed from the child. Linear and quadratic terms were included for the teacher characteristics and classroom and center structure variables to allow for linear and nonlinear relations between structural and process quality.

Third, we performed a discriminant analysis to identify the factors that are most able to classify centers into three categories based on overall center quality: poor, mediocre, or developmentally appropriate care.

The Relation Between Center Quality and Child Outcomes. Hierarchical regression analyses were used to test the concurrent relationship between children's developmental outcomes and the quality of their child care center. These models included the preschool classroom quality index, maternal education, child ethnicity, child gender, state, and center sector as fixed-effect variables and child care center as a random effect variable. The initial models included all two-way interactions among the predictor variables. Nonsignificant interaction terms were then omitted one at a time to decrease the collinearity among the predictors, but the state by sector interaction was always maintained because it represented part of the sampling frame.

Chapter 2
An Economic Perspective on the Child Care Center Industry

This chapter provides a theoretical foundation for understanding center child care provision as an industry supplying services in a local market.

Center-based child care is a relatively young, rapidly growing, highly competitive, low wage industry. Center-provided child care has been growing during the last 40 years as part of the dramatic increase in participation of women in the labor force. Child care services are in the process of being commodified, meaning that what was traditionally provided in the home is being replaced by market provision. Child rearing is one of the many kinds of home provision for one's own family that in this century has been increasingly supplanted by market provision. The growth of the child care industry is part of the same process that has brought about greater female labor force participation, particularly among young mothers.

Because massive community dependence on paid child care is a relatively new reality, the markets that provide these services are still developing institutional arrangements. Furthermore, the consumers themselves have little personal experience in and knowledge about the nature of the services they are purchasing or how to distinguish value. It is in this context of market growth and industry development that we should view the supply of and demand for child care center services.

To gain an understanding of the child care market, it is helpful to examine the nature of the industry and the economic forces operating within it. This chapter provides a theoretical foundation for understanding center child care provision as an industry supplying services in a local market. It also introduces a number of hypotheses which are tested in this study.

Finally, it introduces terminology useful to the economic analysis of the center child care market. These terms, identified in italics, throughout the report and defined in the text, are further explained in the glossary.

MARKET SUPPLY

This study focuses on the child care center market and specifically on centers providing full-day and full-year care. Since alternative forms of child care and ECE services exist, centers necessarily compete with these other providers. For instance, family child care providers serve approximately four million children (Willer et al., 1991), and public schools are competing increasingly with centers to provide before- and after- school care. Existence of these and other competing child care providers increases price competition, creating continual pressure to reduce costs and fees.

CENTER CHILD CARE AS A REGULATED MARKET

Child care in general is a regulated market, and the regulatory environment affects both the supply of services and competition. All states regulate child care centers by requiring licensure and conformance to various rules. But not only do the regulations vary from state to state, enforcement of standards varies as well. In addition to state regulation, some municipalities and counties have requirements, and child care programs on military bases or ECE programs such as Head Start and special state funded programs meet special standards designed for these specific programs.

By setting minimum standards for such things as staffing ratios, staff qualifications, and building safety, state licensing regulation reduces the availability of lower-cost alternatives for parents who may not be able to afford higher-quality services. However, effective enforcement of appropriate minimum standards protects children and should add to the security felt by parents. An important issue is whether increased licensing standards raise quality and if so how this affects cost.

...price competition requires providers to keep their charges in line with the going price in their local market...

MONOPOLISTIC COMPETITION

Child care centers compete within local markets. They are characterized by what is termed *monopolistic competition*. Child care center markets are competitive because, despite the fact that providers may be working cooperatively on some projects in their local community, they compete keenly for customers in their local market area. Centers are relatively easy to open, and while somewhat expensive to start up, these costs are not high compared to industries dominated by big business. Furthermore, family child care providers who provide care and education for other people's children in their own homes compete as an alternate and often less expensive substitute for center child care.

Despite the competition, each center has a small bit of monopoly power, because the services of each center are slightly different. For instance, they differ in their approaches to child care, the personalities and abilities of their staff, the kinds of special services provided, the convenience of their location, hours of operation, and their reputation in the community. In particular, the quality of services is a major source of differentiation between providers. For instance, the extent to which educational and developmental programs are incorporated into the care-giving affects quality. Centers are monopolistically competitive because, ordinarily, the unique features of the center provide little financial advantage, given the stiff competition for customers.

These characteristics of monopolistic competition should lead to three important effects, which this study investigates:

1. Although providers have some control over their fees, price competition requires providers to keep their charges in line with the going price in their local market, and thereby holds prices down.
2. Price competition should eliminate excess profits, so that most centers earn a low rate of return on their investment relative to less competitive markets.
3. Because new centers can enter the market relatively easily, there may be too many centers to keep all of them operating at full capacity. Thus, many center administrators may be continually trying to fill vacant slots.

THE CHILD CARE CENTER MARKET AS A MIXED INDUSTRY

The center child care market is a *mixed industry*, meaning that center services are supplied by establishments with different structures of ownership, including centers that are private for-profit, private nonprofit, and operated by public agencies. In addition, centers may operate under the sponsorship of larger organizations such as a school district, municipality, college, or hospital. Despite this variety, there are three sectors generally considered in an analysis of the market: for-profit, nonprofit, and public. These sectors can have different objectives. For-profit centers are typically designed to maximize profits, centers operated by public agencies are often designed to serve at-risk children and provide expanded services, and nonprofits are designed around a variety of objectives, for instance, providing good quality, serving the poor, serving their local church community, etc.

In a mixed industry, economic theory predicts that growth would be concentrated in the for-profit sector. This sector is sensitive to customer demand and grows accordingly. Growth in nonprofit establishments would be less related to customer demand than to the level of individual, philanthropic, and public support available. At least one earlier study found this to be the case in center child care (Rose-Ackerman, 1986).

MARKET DEMAND AND IMPERFECTIONS

The primary reason parents demand full-time child care services is to allow mothers, the traditional caregivers, to work outside the home. Fees for child care services that are high compared to their potential income will reduce mothers' incentives to work in the paid work force. Overall, child care costs represent a substantial portion of family income—between 6% and 23%—and, in particular, mothers' incomes (Willer et al., 1991). Thus, the decision by mothers to move into the labor force is dependent on the availability of affordable child care services. Indeed, many studies have shown a negative relation between child care fees and women's labor force participation (Connelly, in Blau, 1991; Ribar, 1992). Therefore, the amount of services demanded in the market as a whole should be sensitive to the fees charged. If fees drop, there should be a considerable increase in the amount of services purchased in the market as a whole at the lower price. Previous studies have found the quantity demanded for child care to be quite sensitive to fees (Rose-Ackerman, 1986; Robins & Spiegelman, 1978).

In addition to this relation between fees and quantity of services demanded, several demand conditions influence parents' decisions about how much and what quality of service to purchase at a given fee. These include: location convenience of the center, parents' knowledge of the array of options and quality of services provided, the reliability and trustworthiness of different providers, and parents' values and preferences. Parents weigh all these considerations against the family's budgetary constraints. Finally, government and philanthropic demand for child care also exists and influences overall market demand. Several of these conditions may reduce demand for good-quality care.

First, although from the perspective of the providers the child care market is monopolistically competitive with many competitors, any particular family wanting to purchase care may think they have very few choices. Many parents are first-time buyers with little experience with and knowledge of options available and limited ability to recognize different quality levels. Despite the work of resource and referral agencies, the market is not yet well organized to inform parents of their options. To the extent that convenient location and cost are of over-riding importance, in fact, many parents may have few choices of good-quality care. Finally, parents may limit their search because the transaction costs in terms of the time it takes to locate a child care provider may be high. All these factors may limit parents' search strategy and reduce the demand for good-quality care.

Second, the purchasers of child care are not in a good position to judge the quality of the care they buy. This is because the *purchaser* of child care is not the *consumer*. The child uses the services while the parents (or other purchasers) choose the provider and pay for the services. Thus, it is the purchaser's (not the child's) effective demand that is represented in the market. The parents or the government agencies, not the child, choose what to buy.

This makes child care a classic example of a trust good, a good or service the quality of which is very important to the purchasers but difficult for them to assess accurately (Weisbrod, 1988; Kagan & Newton, 1989). Parents and other purchasers are not in a position to judge child care quality as easily as they could a service they use themselves (Blau, 1991; Browne Miller, 1990). Because trusting the provider is important, parents who can afford to may choose to pay a higher price to use a highly recommended (but more expensive) provider to be assured the provider is reliable. In effect, these parents or other purchasers are paying for two things: services for their children and peace of mind. The desire for a trustworthy provider explains the importance of word of mouth, center licensing, accreditation, and name

child care is a classic example of a trust good, a good or service the quality of which is very important to the purchasers but difficult for the them to assess accurately.

Several possible market imperfections seem to exist in child care markets, which could lower private demand and public demand for good-quality care.

recognition in these markets. In addition, once parents choose a provider they trust, they may overestimate the quality of the service and continue to use services that are not as good as they think they are.

Purchasers of child care may have inadequate information for other reasons as well, related to their inexperience in child rearing and knowledge about what to look for in good-quality child care. They may not have the knowledge about the importance and nature of good-quality care.

Third, nonparental purchasers of child care may also downplay quality in their decisions. For instance, local government agencies that purchase care for low-income children usually operate under mandates that limit what they can pay. Federal mandates to tie subsidy payments to some estimate of the market rate tend to hold down rates in low-income communities, relegating many poor children to low-cost centers. In addition, local authorities usually have to make trade-offs between the number of children subsidized and the level of quality of care received by the children they subsidize. For instance, the current AFDC JOBS state-level initiatives to move poor mothers into paid work and off welfare include child care benefits. To the extent that the objective is the mothers' labor force participation, such initiatives focus on increasing the number of children subsidized through child care rather than the quality of care they receive.

For a market to function well, buyers must know exactly what they are buying. In addition, all those who benefit from the service must be represented on the demand side of the market, paying the market price for the service. Then, if a lot of sellers, or providers, are competing for business, they should respond to buyers' preferences to produce what the buyers want at low cost. Several possible market imperfections (failures of the market to supply optimal amounts at low cost) seem to exist in child care markets, which could lower private (parent) demand and public demand (including government and philanthropies) for good-quality care. Serious market imperfections lead to market failure which can justify public action—to help buyers make more informed decisions and to provide monetary incentives to increase the demand for better quality services, or to provide public or philanthropic investments. In the case of the child care market, there are four potential bases for market imperfections that lead to an underconsumption of good-quality services.

INADEQUATE CONSUMER INFORMATION

Information about quality of services and the full range of suppliers may be asymmetrically (unevenly) distributed between providers and buyers in the center market, with providers being more informed than the buyers. To the extent that working parents cannot monitor the level of quality of services they are purchasing, low-quality providers can charge fees equivalent to that of the good-quality providers. They can continue to be successful and not be driven out of business. Therefore, there may be financial incentives for providers to lower quality and disincentives for them to improve their quality because they may not be able to offset the extra cost by charging higher fees.

THE AGENCY PROBLEM

Parents act as agents for their child in purchasing child care services. An agency problem exists when the interests of the child, the principal or the recipient of services in this case, are not directly and appropriately reflected in the market demand for services based on the agent's decisions[1]. For the market mechanism to work to supply children with what they need, parents who buy services must know their child's needs and consider only those needs in purchasing the good or service.

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[1] Strictly speaking economists would argue that it is the center that serves as the agent for the parents that enter into a contract to care for the children. Because the parents cannot monitor the services provided for their child the center acts as the parents' agent. We have discussed this above in our description of child care as a trust good. Here, we wish to emphasize the implicit contract between parents and their child which is involved in the use of other care providers.

This, of course, is true of all purchases made by parents for their children. This is an impossibility in most cases. Parent purchases for their children are made within the context of the family's budget which also takes into account the parents' needs to satisfy their own well-being as well as that of their children. Low and middle income families cannot demand good-quality, expensive child care even if they know they should because they have conflicting demands on their finances and on other family resources like their time. If parents emphasize their own needs—such as choosing a provider that is conveniently located, has fees in line with their budgetary limits, or offers hours of operation that accommodate their work schedules—their demand may be for quality that is below optimal levels from the point of view of the child's welfare.

This reasoning implies that parents may not demand quality, despite their knowledge that good-quality care is important for their child's development, or that they may not seek such knowledge if it makes it more difficult to choose between adult and child needs. In fact, previous studies have found that parents primarily choose child care services on the basis of cost, convenience, and hours of operation. One study reported that few parents visit more than one center before enrolling their child (Hayes et al., 1990). Many parents face a profound moral dilemma in acting in their child's agent under circumstances which prescribe their choices.

Agency problems create potential market imperfections which normally can be resolved by creating incentives which induce the agent to act in the best interest of the principal. Any family purchase related to the child's well-being involves potentially agonizing choices of the parents. However, public subsidies can ameliorate the problem, by permitting parents to pay more for the service, and thereby, to demand higher quality services.

CHILD CARE AS A MERIT GOOD

Markets are not good mechanisms for allocating *merit goods*, things that society as a whole or a large number of altruistic members think everyone should have access to regardless of their ability to pay or their personal tastes. Merit goods reflect the values of the society. Historically, child care services (but not necessarily *good-quality* services) have been considered a merit good by some groups or communities that have valued the service enough to help pay for more or higher quality services for parents who could not otherwise afford it.

As noted in Chapter 1, good-quality services have been a successful intervention for at-risk children. Thus, a case can be made that these children deserve—merit—good-quality services. For merit goods to be provided, however, the people with these values must be persuaded to pay for the services and thereby substitute their demand for that of the families whose children merit the service. Good-quality child care could even become a merit good for middle-class children if we as a society come to be persuaded that these children also merit good-quality services regardless of their parents' decisions and the market options.

CHILD CARE AS A COLLECTIVE GOOD

Market imperfections exist for goods and services which are *collective goods*, goods or services the consumption of which benefits individuals other than the direct consumers. Good-quality child care is a collective good because, like public education in general, giving children a good start serves the interest of society as a whole. We all benefit if developmentally appropriate child care will mean less public expenditure on special education, public school intervention, health services, and the penal system, and that children grow up to be more productive adults. To the extent that child care is a collective good, those who benefit indirectly from child care must pay for the services in order to create the socially optimal amount of services. This is because parents—the purchasers of care—only take into account their own family's needs. If, however, the external benefits to others than the family receiving the service are not reflected in demand (they are external to market

We all benefit if developmentally appropriate child care will mean less public expenditure on special education...

An important concern that affects the quality of child care is the extent to which the child care industry depends on members of the low-wage labor force for some of its staff.

decisions), enough good-quality services will not be provided.

The market imperfections outlined above suggest an inability of private market exchanges to provide enough good-quality services. To satisfy societal demand for good-quality child care services, philanthropic groups, employers, and the public must express their demand by increasing their financial support. If they do not, their demand does not exist in the market place, so that not enough good-quality services are provided.

INTERACTION BETWEEN LOW WAGES AND QUALITY

Active price competition in the child care market should create continual pressure on centers to keep down costs and therefore wages. This can have an adverse impact on quality because of the caliber of child care employees hired, the high staff turnover rates, and, possibly, lower staff-to-child ratios.

The fact that real wages have been falling at the bottom end of the labor market for the last 20 years means that there has been a steady supply of workers willing to work at low paying jobs. Child care employers tap into this supply to keep their labor costs and therefore their fees low. An important concern that affects the quality of child care is the extent to which the child care industry depends on members of the low-wage labor force for some of its staff. The low-wage labor force is composed of people with little work experience, few skills, groups who have been discriminated against in the labor market, people who move in and out of the labor force, and part-time workers. While they represent a pool of people willing to accept low pay, hiring from this pool should increase staff turnover rates because people in this low-wage labor force tend to move from job to job as they gain more experience and commitment to remaining in the labor market. While this might not seriously affect the quality of fast food, it could be very damaging to quality in early childhood care and education.

The study also estimates staff *foregone wages*, the difference between the wage a staff person could earn in another occupation—based on the person's education, sex, age, racial/ethnic status, and marital status—and the person's wage as a child care worker. There are two explanations of foregone wages. First is the explanation given in the industry that qualified ECE professionals may subsidize the cost of care to purchasers through their low wages. These staff members are providing their services at less than what they are worth in the labor market. Second, it can also be argued that the industry may use less capable cohorts within a given level of education. In this study we estimate foregone wages, and also look for situations in which the staff wages may more nearly reflect the staff members' market value.

Of particular interest is the relation between wage rate levels and quality of child care. Normally, economists assume that it is higher quality staff, not higher wages, that improves quality. Raising wages, while beneficial to existing child care workers, should not affect quality of services unless centers hire more qualified staff. Increasing wages for existing staff would raise quality only if higher wages cause permanent increases in productivity of existing staff. Therefore, economists argue that, assuming that more qualified staff do produce higher quality, centers should hire better qualified staff and pay the wages which attract such staff based on existing market conditions. On the other hand, early childhood educators do tend to argue that raising wages does increase productivity of existing staff. More importantly, looking at the long-run, they argue that establishing a professional wage is a precondition to attracting more qualified individuals into the profession.

RESEARCH QUESTIONS ON THE EFFECTS OF MARKET COMPETITION

This study looks at the child care center market to investigate the competitive characteristics of the industry, the effect of state licensing standards on quality of services, the differences in performance between the for-profit and non-profit sectors, the extent to which child care center staff are underpaid relative to their education, and the effects of wage rates on quality.

Competition in the mixed industry in which child care centers operate is affected by differences in the objectives of for-profit and nonprofit sectors of the industry, and by the differences in demand and supply conditions faced by centers in different sectors. In this study we compare differences in quality and costs for nonprofit and for-profit sectors and test several hypotheses about the impact of competition on cost and quality:

RESEARCH QUESTIONS

1. Does quality differ by sector and auspice? In particular, the economics literature suggests that for-profit centers may provide lower quality services than nonprofit centers because of their dependence on parent demand and because of industry competition. If it costs more to produce higher quality services, for-profit centers might provide lower quality at a lower cost because of parents' lack of understanding of what constitutes quality as well as their lack of information about and inability to monitor center quality (Walker, 1991; Kagan & Newton, 1989). In addition, barriers to entry of new centers could permit existing for-profit centers to continue to earn profits while providing lower quality services because new good-quality entrants do not come into the market quickly enough to compete profits away (Maggenheim, 1990).
2. Are nonprofit centers less efficient than for-profit centers? That is, the costs of providing any given level of quality may be somewhat higher in nonprofit than for-profit centers. James and Rose-Ackerman (1986) suggested that donations and public funding to nonprofit centers may allow operational inefficiencies—less effective management and less economical use of resources than that in the for-profit sector. An earlier study found some evidence of this phenomenon (Mukerjee & Witte, 1990).
3. Are parents fully informed consumers? Policy makers and previous researchers have assumed that parents were informed consumers when they select child care for their children. This assumption has led to the argument that, because parents report high satisfaction with child care, there is not a problem with the fact that much of child care is judged poor to mediocre by professionals. Instead, parents might be less satisfied if they realized that their child care does not provide safe and developmentally appropriate care. Data collected on parent values and their perceptions of the quality of care their child was receiving, along with data on center quality and fees, enabled us to test for the existence of market imperfections due to lack of information or the agency problem which was discussed above.
4. Are there substantial foregone earnings incurred by centers staff? Previous pilot work has indicated that child care workers incur substantial foregone wages (Culkin, Helburn, Morris, & Watson, 1991). This study estimates the value of foregone earnings, assuming that the difference in actual and market wage based on a person's education, age, gender, racial/ethnic status and marital status is a true reflection of foregone earnings.

...economics literature suggests that for-profit centers may provide lower quality services than nonprofit centers... but non-profit centers are less efficient

Chapter 3
Conceptual Structure of Child Care Services

> ***...the definition of quality by child care professionals is used as the yardstick by which to measure quality.***

DEFINING QUALITY OF CHILD CARE SERVICES

Child care centers provide a complex set of services to children rather than a tangible good like clothing or automobiles. Staff interactions with children constitute a large portion of what the children experience, which explains the overriding importance of the quality of staff in child care. Even though the ultimate product of child care is the child's development, it is still the case that what centers provide is the service, not the child outcomes. Center costs are related to the provision of these child care services which can be considered an *intermediate good* contributing to children's development.

To capture these distinctions, in this study we define three types of quality:
(1) structural quality, or the quality of the inputs to child care provision;
(2) process quality, or the overall quality of the services; and
(3) children's developmental outcomes, which is the output or result of the quality of child care provision.

Structural quality measures include staff-to-child ratio, group size, staff education and experience, square feet of facility per child, and other measures of the quality of the facility that houses the center. They are aspects of classroom structure that can be regulated to improve the quality of services to children.

Process quality refers to the general environment and social interactions in the classroom. It represents the quality of services that are directly received by children and their families which cannot be regulated because of their qualitative nature. Early care and education professionals have reached consensus on the major components of process quality. Developmentally appropriate child care includes an integration of good nurturing care that protects children's health and safety; developmentally appropriate activities for children; the interaction of trained teachers with children to promote their emotional security, development, and learning; a physical environment that provides adequate stimulation and opportunities for a wide variety of developmental and learning activities; and involvement with the child's family through clear and routine communication. These aspects of quality are captured in the quality index described in Chapter One.

Child outcomes refers to measures of the cognitive and socio-emotional functioning of the children, outcomes which over the longer term would be expected to relate to children's success in school. These include measures of children's language abilities, pre-academic skills, attitudes toward child care and perceptions of their competence, relationships with their teachers, and social skills.

Although there is a consensus among child care professionals about what constitutes quality, this is not necessarily true among the actual purchasers of the services—parents and others—who have other requirements as well. In this study, the definition of quality by child care professionals is used as the yardstick by which to measure quality. Analysis of the results, however, incorporates insights about preferences of parents who purchase child care services to indicate what parents themselves value in child care.

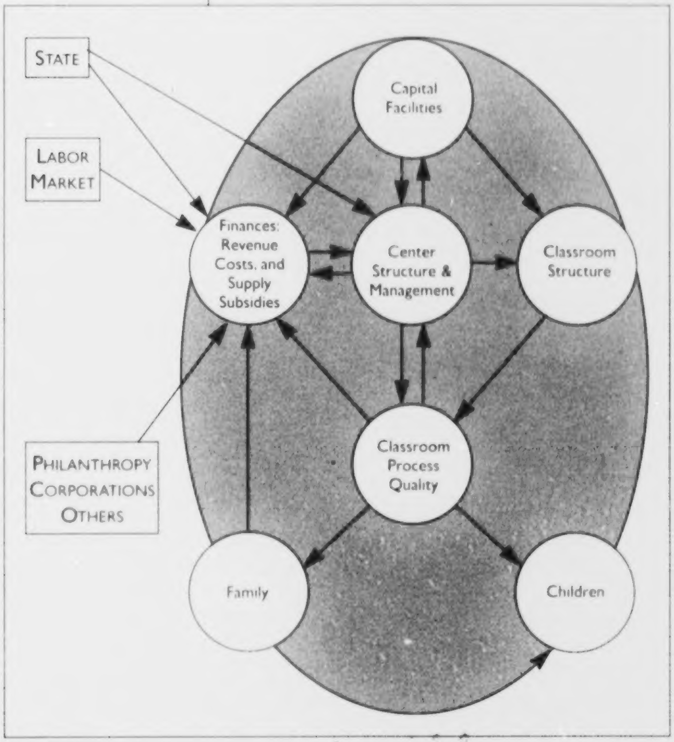
In the conceptual structure below, we outline connections between structural quality, process quality, and children's outcomes. Generally, one would assume that good structural quality features—high staff-to-child ratios and qualified staff—lead to good-quality child care which, in turn, facilitate the cognitive and socio-emotional development of the children served. Our conceptual structure depicts this set of relations and others as well.

CONCEPTUAL STRUCTURE

Figure 3.1 is a visual presentation of the child care center as a system of interrelated components that are connected to and dependent upon other institutions and aspects of the community. The figure depicts the center as part of a larger community, serving families, and influenced by various external forces. The center is shown as the shaded oval, and the center components are represented by circles inside the oval. Each circle either directly or indirectly affects the process quality of center services and the development of children served by the center. They also indicate the categories of data collected in the study. External institutions and forces are depicted by squares outside of the oval. The buyers and consumers—the families and their children—are represented by circles on the border of the center oval because they are both part of the center's activities and separate from it. The arrows in the figure show the assumed direction of relations and interactions among the components that are of most importance to this study. Some of the arrows depict relationships that are directly tested in this study, and some represent relations considered important for more general explanations of processes and influences operating in the child care market.

Figure 3.1

Conceptual Structure: Cost, Quality, Outcomes in Early Childhood Care and Education Study


State
Labor Market
Philanthropy Corporations Others
Capital Facilities
Finances: Revenue Costs, and Supply Subsidies
Center Structure & Management
Classroom Structure
Classroom Process Quality
Family
Children

The model shows the factors that affect cost and quality, and the determinants of quality of services (process quality) and of children's developmental outcomes. The middle circle, center structure and management, affects all aspects of center operations. For example, the center operates within a given place in the child care market: it is a for-profit, nonprofit, or part of a public agency and it attracts a particular clientele. As shown by the arrows, finances affect quality, and the provision of quality services has financial implications. Arrows into the finances circle depict sources of costs and flows of revenue into the center.

The state represents the geo-political and economic environment as well as the regulatory environment, all of which affect center operations. The labor market affects centers by supplying staff, and sets the minimum wages and salaries that the center must pay to its staff. Philanthropic agencies, corporations, and employers provide revenue and other resources and support, affecting the demand for and supply of center services. Families, government agencies, philanthropies, and businesses provide the center revenues.

The arrow from the finances circle into the center structure and management circle indicates that financial viability affects center management decisions. Supply responds to demand. For instance, centers may respond to a decline in the number of children served by trying to do a better job of satisfying their customers, by reducing cost, or through some other strategy.

As the arrows indicate, capital facilities are regulated by the state, which limits center management decisions about the size and quality of capital facilities. Thus, state regulations have an indirect effect on capital facilities. The actual capital facilities chosen directly affect both finances and classroom structure. The arrows from capital facilities and center structure and from classroom structure to classroom process quality indicate the factors affecting overall center quality. Center structure characteristics such as the size and scope of the program, the center's philosophy and curriculum choices, use of volunteers, and quality of administration affect process quality.

The primary relation between cost and quality is shown through the arrows from center structure to classroom structure to process quality to finances. Given the level of quality a center tries to achieve in the classroom, it must hire a particular quality of staff with specific educational and other attributes and use a particular staffing ratio. These decisions about quality affect costs.

The children circle represents the developmental outcomes of children receiving the services of the center. Arrows from classroom process quality and from families to children indicate that a child's development is directly affected by classroom process quality and by the child's family characteristics, such as family income, parent education, and quality of the home environment. Learning about the relative importance of center versus family characteristics on children's development is a major purpose of the longitudinal continuation of this study.

Finally, the conceptual structure shows the child care center as a system which performs a set of functions to achieve its goals. It portrays the child care center as incorporating information feedback mechanisms that permit the center staff to correct operations in order to achieve the organization's goals. For instance, this is an important characteristic of any business supplying services through markets, because the great advantage of market-oriented supply is that the businesses react appropriately to changes in demand. Nonprofit agencies are also goal oriented and have internal methods for correcting their performance to meet their goals.

Looking at a center as a goal-oriented system permits us to look at both the similarities and differences in the ways centers from different sectors operate. The center structure circle also represents administrative decision making to organize the center system to carry out the center's goals. The center's operations generate information that administrators can use to improve performance. Center decisions include responses to changes in outside influences in the state, the labor market, and in parents' and others' willingness to pay for services. They also include the important leadership functions in the internal operation of the center which help the center achieve its goals. These insights have guided the team's investigation into the role of administration and the differences between center management in different sectors of the market.

...the conceptual structure portrays the child care centers as incorporating information feedback mechanisms that permit center staff...to achieve the organization's goals.

Chapter 4
Quality of Child Care and Children's Developmental Outcomes

In this chapter we will identify some of the types of centers we found more likely to be providing good-quality services.

INTRODUCTION

This chapter summarizes major findings related to (1) the overall process quality of centers; (2) the relation of child care quality to the developmental outcomes of children being served by these centers; (3) the relation of process quality to structural quality and center structure characteristics; (4) the relationship between minimum standards on process quality; and (5) the effect of in-kind donations or extra resources on process quality. In this chapter we will identify some of the types of centers we found more likely to be providing good-quality services. Differences in quality by profit sector are summarized in Chapter 6 where we report sector differences.

To measure classroom quality (process quality), trained observers used instruments (ECERS, ITERS, Caregiver Interaction Scale, and Teacher Involvement Scale) that permitted evaluation of the quality of the total child care environment as well as more specific aspects of the relationship between teacher and child. The overall index of center quality described in Chapter One was scaled from 1 to 7 as follows to conform to the scaling used in the ITERS and ECERS measures:

1 = Inadequate. Children's needs for health and safety are not met; no warmth or support from adults is observed, no learning is encouraged.

3 = Minimal. Children's basic health and safety needs partially met; a little warmth and support is provided by adults; there are few learning experiences.

5 = Good. Health and safety needs are fully met; staff are caring and supportive of children; children are learning in many ways through interesting, fun activities.

7 = Excellent. Everything is "good"; in addition, children are encouraged to become independent; the teacher plans for children's individual learning needs; adults have close, personal relationships with each child.

In this report quality measures are also categorized according to the range of quality scores. In particular, we call services that are rated below minimal (less than 3) "poor"; those that are between minimal and good (3 to less than 5) "mediocre"; and those that are between good and excellent (5 and over) "high" or "developmentally appropriate."

Findings reported in this chapter are based on the descriptive analysis of means, on psychometric analysis of the relation between child outcomes and center process quality, and on econometric and psychometric analyses of the relationship between process quality and structural quality. Unless expressly stated, all findings of differences reported in this and later chapters are statistically significant at the 5% level or better.

Data are presented in five tables in this chapter. Tables 4.1 and 4.2 present mean values of process and structural quality measures by state and for the total sample. Table 4.1 also shows the percent of centers in each state that fell into the categories of poor, mediocre, and developmentally appropriate quality based on the overall quality index calculated for each center. Overall quality of services was significantly lower in North Carolina than in Connecticut, California and Colorado; and quality in Colorado was significantly lower than quality in Connecticut and California. Structural quality measures follow this same pattern generally but not universally. Table 4.3 reports mean values of each child outcome measure for poor-, mediocre-, and developmentally appropriate-quality centers. Table 4.4 compares mean overall process quality for each state with that state's minimum licensing and enforcement standards. Table 4.5 presents mean values of structural and process quality, finances, and wages and benefits for four special categories of centers with higher than average process quality scores. It compares these special categories of centers with results for the remaining centers in the sample.

QUALITY FINDING ONE

Child care at most centers in the United States is poor to mediocre, with almost half of the infants and toddlers in rooms of less than minimal quality.

Child care at most centers in the United States is poor to mediocre, with almost half of the infants and toddlers in rooms of less than minimal quality.

The levels of quality required to support children's development are not being met by most child care centers. Figures 4.1-4.3 show the distribution of quality ratings as rated by independent observers. Figure 4.1 indicates that centers in the study were well below the quality standard of good (5). While there was a great deal of variation in the sample of 401 centers, the mean score for all centers was 4.0, a full point below good quality. Only 1 in 7, or 14%, were rated as developmentally appropriate (5 or higher), while the remaining 86% scored from poor to mediocre. What is most disconcerting is the fact that nearly half of all centers (49%) scored 4 or less more than a full point below the quality designation of good, and more than 1 in 8 (12%) scored below a minimal level of care and education.

INFANT AND TODDLER CARE

Infant and toddler care is of grave concern. Quality in rooms caring for infants and toddlers was substantially lower than in rooms caring for older children. As can be seen in Figure 4.2, of the 225 infant and toddler rooms, only 1 in 12, or 8%, met the high quality level (a score of 5 or above), while 2 in 5, or 40%, had poor quality (a rating below 3). For infants/toddlers, a score below 3 indicates that the health and welfare of these very young and vulnerable children are at substantial risk during the long hours they spend in the centers. These poor-quality infant/toddler rooms are typified by a lack of basic sanitary conditions for diapering and feeding. For example, caregivers may not wash their hands after diapering each child or take other precautions to minimize the spread of illness among children. These are obvious safety hazards that endanger children. There is a lack of warm, supportive relationships with caring adults—children are rarely held, cuddled, or talked to. There is little or no use of toys and other materials that encourage physical, social, emotional, and intellectual growth. Health and safety practices were generally problematic in infant/toddler classrooms. The areas of health practice we observed included meals/snacks, diapering/toileting, personal grooming for children, and general health practice. A score of 1 indicates that the procedures were not handled in a sanitary way to avoid spread of germs. At least 50 percent of all infant/toddler classrooms received a score of 1 for general health practice, while 20 percent of classrooms were rated 1 on the personal grooming item. For general safety practice, 36% of classes received a score of 1. Seventy-five percent of all infant/toddler classrooms had a score of 1 on one or more of the health/safety items.

We constructed a health and safety factor from these items. The mean factor scores were 2.5 for all infant/toddler classrooms, 1.6 for poor, 2.9 for mediocre, and 4.2 for developmentally appropriate classrooms.

PRESCHOOL CARE

Center services for preschool-age children fared somewhat better in terms of quality ratings than center services overall (see Figure 4.3). Nearly one-quarter of centers (24%) met the criteria for developmentally appropriate provision of services (a score of 5 or above). However, 76% failed to meet this standard, and 10% fell below the minimal level. For preschoolers, a rating below 3 indicates that children are not likely to be encouraged to develop

Figure 4.1
Process Quality in Child Care Centers

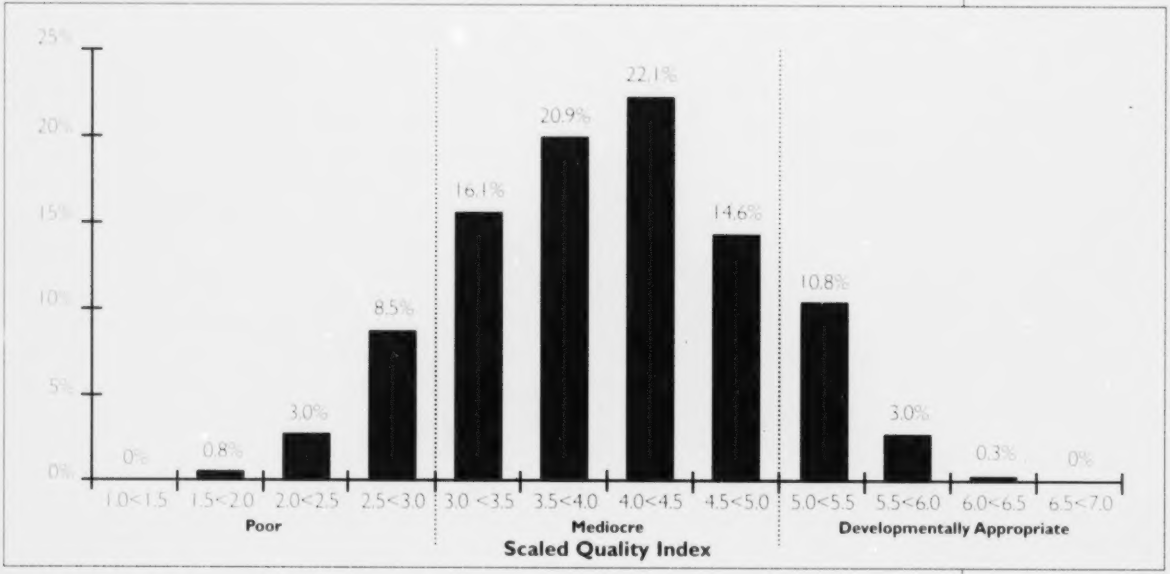
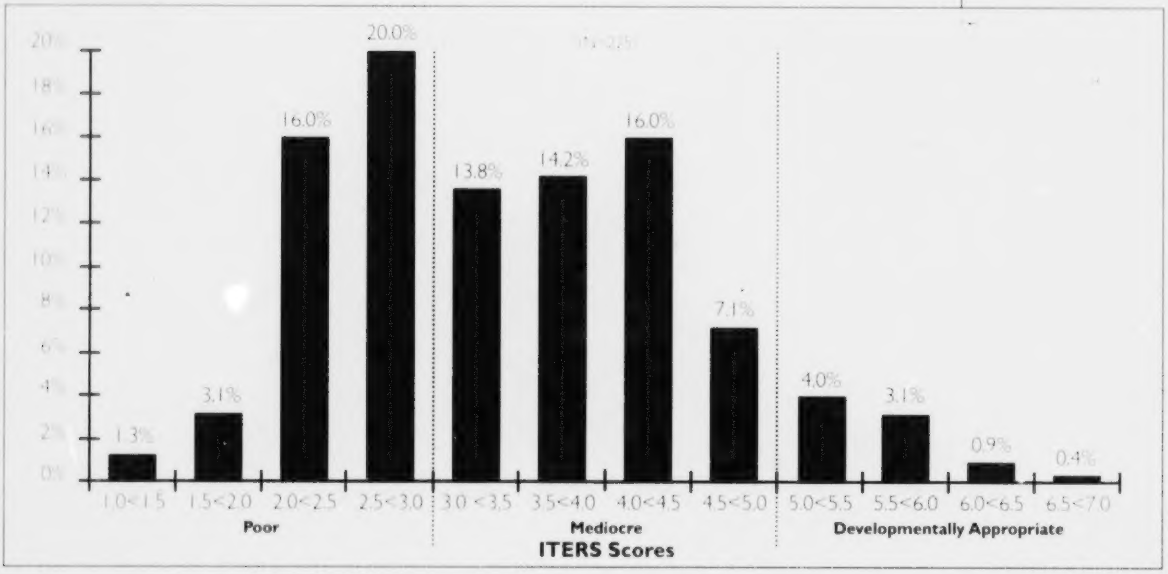


Figure 4.2
Process Quality in Child Care Centers: Infant/Toddler Classrooms



the social and intellectual skills that are so important for later success in school. Children's language development is generally ignored—children are rarely engaged in meaningful conversations with their teachers and are not encouraged to talk throughout the day. There are inadequate furnishings (tables, chairs, bookshelves), equipment, and materials used to meet children's needs for safety or personal care (eating/sleeping/toileting) or for play or learning.

COMPARISONS WITH THE NATIONAL CHILD CARE STAFFING STUDY

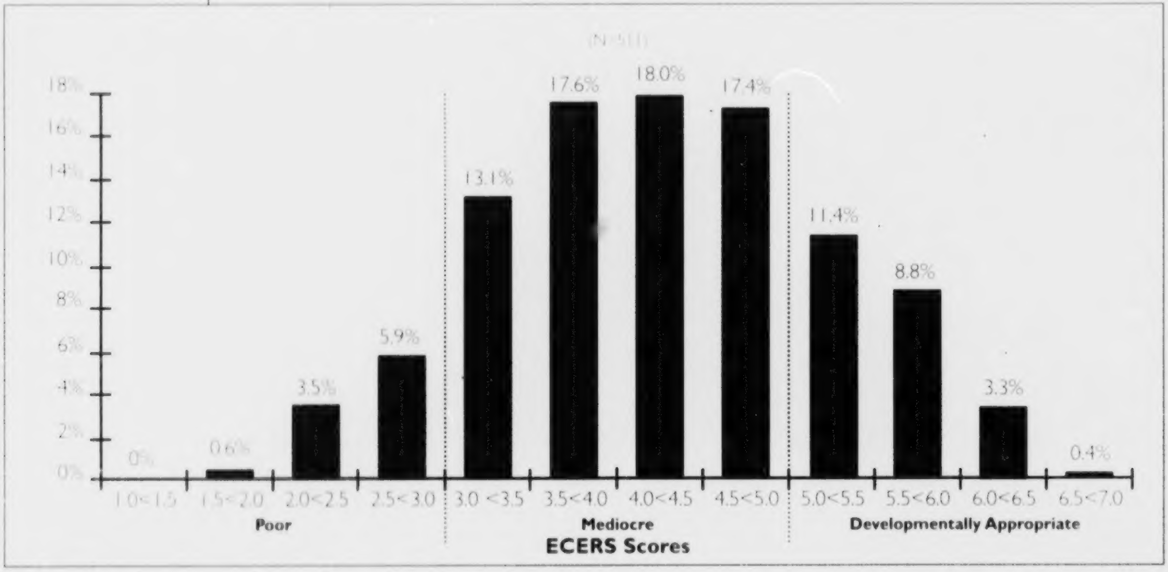
Our findings of the quality of care and education for preschoolers are generally consistent with those of the National Child Care Staffing Study (NCCSS) (Whitebook et al., 1989). Whitebook and colleagues reported overall quality scores using two subscales which were derived through a maximum likelihood factor analysis of the ECERS and ITERS scale items. For each scale, quality scores were reported for the appropriate activity subscale. The ECERS subscale scores for preschool groups found in the present study are almost exactly the same as the NCCSS scores from six years ago. Whitebook and colleagues reported an ECERS score of 4.4 for the appropriate caregiving factor and 3.6 for the developmentally appropriate activities factor. Our mean total ECERS scores for preschool groups were 4.4 for the appropriate caregiving and 3.8 for the developmentally appropriate activities factor. Results of both of these studies indicate that centers score lower in the area of developmentally appropriate activities than care giving.

For infants and toddlers, if the samples are comparable, our results indicate that there may have been a decline in the quality of care and education children receive. The NCCSS reported appropriate caregiving ITERS factor scores of 4.15 and 4.10 for infants and toddlers, respectively, while for this study the ITERS appropriate caregiving factor score for the combined groups of infants and toddlers was 3.63. The NCCSS scores for the developmentally appropriate activities factor were 3.17 for infants and 3.57 for toddlers, while for this study the score for the combined group of infants and toddlers was 3.13.

For the ECERS factors, appropriate care-giving and developmentally appropriate activities, there were significant state differences (sector and auspice similarities and differences will be reported in Chapter Six). Centers in California and Connecticut had significantly higher scores than did centers in Colorado and North Carolina.

Figure 4.3

Process Quality in Child Care Centers: Preschool Classrooms



For the Arnett Caregiver Interaction Scale, total scores in California and Connecticut were higher than those in Colorado which were higher than in North Carolina. On the Arnett Scale, North Carolina teachers showed more harshness than teachers in other states. Teachers in North Carolina were more detached than teachers in Colorado who were more detached than teachers in California and Connecticut. Scores on the Teacher Involvement Scale were higher in Connecticut than in the other three states.

QUALITY FINDING TWO

Across all levels of maternal education and child gender and ethnicity, children's cognitive and social development are positively related to the quality of their child care experience.

Information about the status of children's cognitive and socio-emotional development was gathered from 826 preschool-aged children who were attending classrooms which were included in the cost and quality data collection phase. These preschool classrooms were located in a subset of 181 of the centers from the original sample. The children were an average of four years old at the time of data collection, and were in their next-to-last year of preschool. Data on each child's developmental outcomes were gathered from two sources: individual assessments and teacher ratings. Trained assessors administered individual assessments of children's receptive language ability, pre-academic skills (pre-reading and pre-math), and perceptions of their own competence and attitudes toward child care. Teachers completed ratings of children's social skills (positive behaviors, sociability, and problem behaviors), and parents completed demographic surveys of child and family characteristics. (See Chapter One for a description of instruments.)

Table 4.3 contains the means and standard deviations on each child outcomes measure by three categories of quality of care (poor, mediocre, and developmentally appropriate) as measured by the process quality index for the preschool classroom. These categories are used to illustrate the relationship between child care quality and children's outcomes. Hierarchical linear regression analyses were used to test the relationship between each of the child outcomes measures and the classroom process quality index (see Chapter One). The analyses controlled for factors known to be related to both child care selection and developmental outcomes, including maternal education, child gender and ethnicity, state, and center sector (nonprofit or for-profit). Child care center quality was significantly related to maternal education, child ethnicity, state, and the interaction of state and sector in the present sample.

A positive influence of child care quality was found across all areas of children's outcomes that were examined. This positive influence was found for measures from both sources of data, the individual assessments and the teacher ratings. The results indicated that children in better quality child care displayed more advanced language and pre-math skills, had more positive views of their child care situation and of themselves, had better relationships with their teachers, and had more advanced prosocial skills.

Children in higher quality classrooms displayed more advanced cognitive skills in two areas: language development and pre-math skills. They scored higher on individual assessments of receptive language ability, indicating that they had a better understanding of language than children in lower quality classrooms. Children in higher quality classes also had better pre-math skills, based on individual assessments which measured abilities such as simple counting and comparisons among different numbers of things. Children's understanding of language showed the strongest relationship to quality of all the outcomes measures studied, while a more moderate relationship was found for children's pre-math skills.

...children's cognitive and social development are positively related to the quality of their child care experience.

Children in higher quality classrooms also evidenced better socio-emotional development. They had more positive attitudes toward themselves and their child care situation, reporting that they liked their child care centers better and rating themselves as more competent than children in lower quality care. Similarly, the teachers in higher quality classrooms viewed their relationship with the children more positively than the teachers in lower quality classrooms. Teachers in better quality classrooms felt warmer toward the children, reported more open communication between themselves and the children, and saw the children's feelings and behaviors toward them as more positive. Finally, teachers in higher quality classrooms rated children's social skills as more advanced in the two areas of prosocial development that were measured, positive behaviors and sociability. Children who are rated higher in positive behaviors display more creativity, are more independent, show better task orientation, and display greater verbal intelligence. Children who score higher in sociability are more extroverted or interested in interacting with other children and generally, seem happier. Teacher ratings of the teacher-child relationship showed the second strongest relationship to child care quality, while children's own attitudes and social skills displayed more moderate relationships.

This positive effect of better quality child care on children's cognitive and socio-emotional outcomes was found for boys and girls, for children from different ethnic backgrounds, and for children whose mothers had different levels of education. The significant relationship of child care quality to children's outcomes was found after accounting for the effects of all these various child and family characteristics which relate to both selection of child care and children's outcomes. Relationships to the quality of child care were found across the whole variety of children's outcomes that were studied: language ability, pre-academic skills, attitudes toward child care and perceptions of competence, teacher-child

Table 4.1

Center Process Quality Measures by State

		CA	CO	CT	N.C	Total	ANOVA Result
	N	99	100	99	100	398	
Process Measures:							
Quality process index	Mean	4.25	3.86	4.34	3.61	4.02	CA,CT>CO>NC
	Sd	0.81	0.70	0.82	0.90	0.86	
ECERS-total score	Mean	4.49	4.18	4.41	3.82	4.22	CA,CT>CO,NC
	Sd	0.88	0.87	1.00	1.06	0.99	
ITERS-total score[1]	Mean	3.70	3.46	3.96	2.88	3.42	CT>CO; NC<others
	Sd	0.84	0.93	1.08	0.94	1.05	
Caregiver Interaction	Mean	3.09	2.91	3.17	2.75	2.98	CT,CA>CO>NC
	Sd	0.40	0.40	0.44	0.48	0.46	
Teacher Involvement Scale % Teacher Responsive	Mean	35%	27%	42%	33%	34%	CT>others
	Sd	22	20	24	20	22	
Percent of Centers[2]:							
Poor Quality	Percent	6%	9%	7%	27%	13%	
Mediocre quality	Percent	76	87	69	63	73	
Developmentaly appropriate	Percent	18	4	24	10	14	

1. Sample size for centers with infant or toddler rooms was n=27 (CA), 57 (CO), 59 (CT), 76 (NC), 219 (total).
2. Based on Center overall quality score. Score < 3 poor; 3 <= Score < 5 mediocre; 5 <= Score developmentally appropriate.

relationships, and social skills. All of these are primary areas of development for preschool-age children, and furthermore, are considered important to children's ability to be ready to learn and to succeed in school. The strongest effect of child care quality was found for children's receptive language ability, and the next strongest for positive aspects of the teacher-child relationship. Children's skills in understanding language and the nature of their interactions with caregivers are key components relating to children's adjustment to school and early academic success (e.g., Alexander & Entwisle, 1988; Pianta & Steinberg, 1992).

As can be seen in Table 4.3, these significant relationships between quality of care and children's outcomes are illustrated by examining the differences in mean scores for children in poor, mediocre, and developmentally appropriate classrooms. The scoring for both the language instrument and the measure of pre-academic skills is standardized, with norms at each age that include a mean of 100 and a standard deviation of 15. This means that for all children, an average score of 100 would be expected, and only about 16% would be expected to score more than 15 points lower, or below 85. The strongest effect was found for children's language abilities, and differences in these scores by quality of care are quite apparent. In our sample, children in care that is developmentally appropriate have an average score of around 100, at the expected average, while children in poor quality care are scoring around 86, or nearly one standard deviation below this. The differences in

Table 4.2

Center Structural Quality Measures by State

Structure Measures	N	CA 99	CO 100	CT 99	NC 100	Total 398	ANOVA Results
Observed Midmorning							
Adult-Child Ratio-center	Mean	0.18	0.20	0.23	0.15	0.19	CT > Others
	Std	0.15	0.17	0.13	0.10	0.14	
Adult-infant ratio[1]	Mean	0.37	0.28	0.33	0.22	0.28	CA, CT > CO, NC
	Std	0.21	0.13	0.12	0.11	0.15	
Adult-preschooler ratio	Mean	0.14	0.18	0.19	0.13	0.16	CT, CO > CA, NC
	Std	0.06	0.14	0.09	0.09	0.11	
Group Size	Mean	13.90	12.78	11.85	12.33	12.71	ns
	Std	7.00	8.66	6.82	5.86	7.17	
Early Childhood Training							
% of Teachers with CDA or More	Mean	95%	72%	78%	60%	76%	CA > CT, CO > NC
	Std	16	27	30	32	30	
% of Teacher Aides with CDA or More	Mean	65%	36%	42%	45%	46%	CA > Others
	Std	35	32	36	38	36	
Education							
Teacher (in years)	Mean	14.1	14.4	14.6	13.4	14.1	Others > NC; CT > CA
	Std	1.3	1.2	1.4	1.1	1.3	
Teacher Aides (in years)	Mean	12.7	12.8	13.1	12.9	12.9	ns
	Std	1.1	1.3	1.2	1.3	1.2	
Tenure							
Teacher (in years)	Mean	4.3	2.6	4.6	3.3	3.7	CA, CT > CO, NC
	Std	3.1	2.0	3.4	2.7	2.9	
Teacher Aides (in years)	Mean	2.7	1.4	2.8	1.7	2.1	CA, CT > CO, NC
	Std	2.4	1.9	2.7	2.0	2.4	

1 Sample size for centers with infant or toddler rooms was n: 27 (CA), 57 (CO), 59 (CT), 76 (NC), 219 (total).

The quality of child care is primarily related to staff-to-child ratios, staff education, and administrator's experience.

the pre-math scores for children in developmentally appropriate care compared to those in poor-quality care are somewhat less than those for language, although still nearly half a standard deviation apart. The measures of children's attitudes and perceptions, the teacher-child relationship, and children's social skills were all scored on 1-5 scales, with 1 being low and 5 being high. The differences in scores between the highest and the lowest quality groups vary by nearly half a standard deviation on these measures as well, which is a meaningful difference.

While better quality care had a positive influence on cognitive and socio-emotional outcomes for all children, in two instances higher quality care had an even stronger positive influence on the development of children typically considered at greater risk for school failure. Better quality child care was even more strongly related to better language abilities for minority children compared to nonminority children. For children whose mothers had relatively less education, there was an even stronger relationship between being in higher quality care and having more positive attitudes about their child care and their own competence.

Overall, a positive relationship was found between child care quality and children's outcomes for all children, with an even stronger positive effect for typically at-risk children in two cases. These findings are consistent with a number of earlier studies that revealed the positive effects of early intervention programs on development for at-risk children (e.g., Campbell & Ramey, 1994; Lazar et al., 1982; Schweinhart, Barnes, & Weikart, 1993; Wasik, Ramey, Bryant, & Sparling, 1990). The results are also consistent with studies that found positive relationships between developmental outcomes and child care quality (e.g., Bryant, Peisner-Feinberg, & Clifford, 1993; Goelman & Pence, 1987; Howes & Olenick, 1986; Howes, Phillips, & Whitebook, 1992; McCartney, 1984; Phillips, McCartney, & Scarr, 1987; Ruopp, Travers, Glantz, & Coelen, 1979; Vandell & Powers, 1983; Whitebook, Howes, & Phillips, 1989). Much of this previous research has focused primarily on children from at-risk backgrounds, has not adjusted for child and family characteristics, or has included centers within only a limited range of child care quality.

There are several important features surrounding the sample of children and centers that distinguish the current study: (1) children from a broad range of family backgrounds were included; (2) the sample of child care centers represented the full range of quality; (3) the centers in the study were representative of typical community child care; and (4) child and family characteristics known to relate to selection of child care and to children's developmental outcomes were controlled for, so that the findings represented the relationship between care quality and child outcomes *after* taking these child and family characteristics into account.

Looked at as a composite, these results indicate that the quality of child care is related to children's developmental outcomes for children from all backgrounds and in child care centers across the range of quality. While a substantial body of research shows the positive impact of early care and education experiences on the development of more at-risk children, there has been an undocumented assumption that children from middle-class families were buffered from the negative impact of poor-quality child care by the positive influences of the family. Contrary to this belief, this study found that, in most cases, the impact of quality was similar for children despite differences in maternal education, gender, ethnic background, state, or center sector. For two measures, children from what are typically considered at-risk backgrounds benefited even more from higher quality care than children from more advantaged backgrounds. These results suggest that while, in some cases, the positive effects of higher quality care are even more crucial for children from backgrounds associated with being at greater risk for school failure, quality of care affects the developmental outcomes of all children. The significant contribution of the present study is the consistent finding of a positive relationship across this wide-ranging sample, which indicates the strength of the impact of child care quality on developmental outcomes for all children.

QUALITY FINDING THREE

The quality of child care is primarily related to higher staff-to-child ratios, staff education, and administrators' experience. In addition, certain characteristics discriminate among poor-, mediocre-, and high-quality centers, the most important of which are teacher wages, their education, and specialized training.

Factors affecting overall center quality were analyzed by two types of multiple regression analysis. The econometric investigation involved estimating a quality production function. The other investigation involved a hierarchical regression analysis. These two procedures are described in Chapter One above. Generally, both analyses included the same explanatory variables. Structural characteristics that should influence quality were selected based on developmental or economic theory or on previous empirical work.

Specifically the regression analyses included the following seven sets of variables as predictors:

1. State and Profit Sector. We always included the factors used to select the sample—state and sector.

2. Teaching Staff Characteristics. *Human capital* or teacher background and experience factors included measures of education, ECE training, age

Table 4.3

Children's Developmental Outcomes by Quality of Center Care

Develepmental Outcomes	**Quality of Care**				
	N	**Poor** 141-154	**Mediocre** 385-416	**Developmentally Appropriate** 239-251	**Overall** 768-821
Receptive Language* **	Mean	85.6	93.3	99.7	93.8
	Std	19.2	17.4	17.4	18.4
Pre-Academic Skills:					
Pre-Math*	Mean	98.9	101.9	105.4	102.4
	Std	14.1	13.2	13.4	13.6
Pre-Reading	Mean	96.7	99.6	102.2	99.9
	Std	15.0	12.2	12.8	13.1
Attitudes/Perceptions*	Mean	4.2	4.4	4.4	4.3
	Std	0.6	0.6	0.6	0.6
Teacher-Child Relationship:					
Positive Aspects***	Mean	4.0	4.1	4.3	4.2
	Std	0.7	0.7	0.6	0.6
Negative Aspects	Mean	2.1	2.1	2.0	2.1
	Std	0.6	0.6	0.6	0.6
Social Skills:					
Positive Behavior*	Mean	3.5	3.6	3.8	3.6
	Std	0.7	0.7	0.7	0.7
Sociability*	Mean	3.8	4.0	4.1	4.0
	Std	0.7	0.7	0.7	0.7
Problem Behavior	Mean	2.6	2.4	2.4	2.4
	Std	0.9	0.9	0.9	0.9

* $p < .05$ ** $p < .01$ *** $p < .001$

Results of the econometric analysis revealed that the ratio of staff to children was the most statistically significant factor affecting quality.

experience, tenure, and ethnicity. Teacher education was measured with three variables representing the proportion of the teaching staff with a high school education or less, with some college, and with at least a BA/BS. Similarly, ECE training was measured by three variables that represented the proportion of the teaching staff with at least a Child Development Associate (CDA), at least an AA degree in early childhood or related field, and at least a BA/BS in early childhood or a related field. The other teaching staff variables included the average age, years of prior experience in ECE, and months of tenure at the center of the teaching staff, each weighted according to the hours worked by each employee. Finally, the ethnicity of the staff was represented by the proportion of teaching staff who were Asian, black, or Latino.

3. Wages of Teaching Staff. The teaching staff wage was included to represent other unobserved staff characteristics which could affect process quality, such as staff personality and character traits. In addition, previous work had suggested that wages contributed to provision of quality, even after considering human capital characteristics such as education and experience. For the econometric analysis, separate wage rates were used for the staff with at most a high school education,with some college training, and with at least a BA/BS. For the hierarchical analysis, a single weighted mean teaching staff wage rate was used.

4. Other Classroom Structure Measures. Five classroom structural measures of quality were selected: the weighted mean staff-to-child ratio during mid-morning inside activities for the two classes observed in the center (weighted by percent of center enrollment in the age group), the weighted mean group size, the square feet of inside space per child, the observer's rating of the quality of that space, and volunteer hours per FTE child.

5. Center Structure. These included the total number of FTE children enrolled, the center's age, the proportion of the children who were infants/toddlers, the proportion of subsidized children, hours of operation, and staff turnover rate. The econometric analysis included separate turnover rates for teachers, assistant teachers, and teacher-directors and dummy variables of each of 12 program scope variables while the hierarchical analysis included the total teaching staff turnover rate, the number of different types of programs provided by the center, and whether the center provided before- and after-school care to school-age children.

6. Administrator's Characteristics. These included the administrator's years of education, age, prior experience in ECE, and tenure at the center as well as staff ratings of the administrator's organizational skills, curriculum leadership, community involvement, and ECE professional community participation.

7. Auspice and Public Funding. Finer distinctions in sector and public financial involvement in the center were studied. These included distinguishing among six categories of auspice: independent for profit, local chain, national systems, independent nonprofit, church affiliated, and publicly operated centers. Dummy variables were also included to identify centers receiving public support and centers where this support was tied to higher standards.

In addition to the regression analyses, we also performed a discriminant analysis, a procedure for choosing correlates of process quality which best discriminate among centers providing poor-, mediocre-, and developmentally appropriate-quality services. In this analysis, in addition to a subset of the variables described above, we included the following financial measures: total labor costs per child hour,

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4. The econometric model included more than 60 variables including linear quadratic terms where theoretically reasonable. The estimate utilized 230 centers for which the data set was complete. The approach to analyzing the data emphasizes including as many relevant independent variables in the model as possible. The coefficients in the equation estimate the contribution of a given characteristic to overall quality when all other factors included in the model are held constant. The accuracy of the estimated coefficients depends on the extent to which all relevant variables are in fact included in the model.

total costs per child hour, hourly preschool fees, and maximum monthly preschool fees.

ECONOMETRIC ANALYSIS

The quality production function equation estimating factors contributing to the provision of good-quality services explained half of the total variance in quality, but only about one-third of the individual variables produced estimated coefficients significantly different from zero.[4] Results of the econometric analysis revealed that the ratio of staff to children was the most statistically significant factor affecting quality. However, the function predicts that it would take a considerable change in staffing ratios to increase overall process quality. For instance, increasing the ratio from .2 (1 adult to 5 children) to .3 (1 adult to 3.3 children) for an average center would increase the quality index by .2 points on the overall quality scale with values from one to seven. Among the several variables measuring staff education and training, only the proportion of all teaching staff with a college degree or more was positively related to quality. It predicted that shifting staff from one-third BA/BS education to all BA/BS degrees or more would increase the quality index by .3. The measures of formal education and levels of staff training were highly correlated since advanced specialized training also required an advanced formal degree. Therefore, it was not possible to separate training from formal education except at lower levels of specialized training (CDA training or less) where training did not seem to affect quality.

Wages rates of staff with no college, with some college, and with at least a college degree were included to capture aspects of staff quality which were not included in the model. In this analysis, the wage rates of teaching staff with no college was most associated with center quality[5]. A one dollar per hour increase in this wage rate brings about an increase in the quality index of .1.

Years of administrative experience or tenure of center administrative directors or owner-operators was positively related to quality. For instrance, a change in tenure from one to ten years would increase the quality index by .2. Teachers' assessments of the effectiveness of the administrator's involvement in planning the curriculum for the children's program was also significant. An increase from average to very good would increase quality by .2.

Inside square feet per FTE child and annual volunteer hours per FTE child were also positively related to center quality, and the turnover rate for teachers and teacher-directors was negativly related to quality, although in each case the magnitude of the effect was small. Centers offering before and after school care and with bilingual children tended to have lower quality.

HIERARCHICAL REGRESSION ANALYSIS

An hierarchical regression analysis was also performed to identify the relative contributions of characteristics of the teachers, classrooms, centers, and administrators in predicting child care quality. The procedure involves entering successive sets of predictors into the estimation, starting with the factors most directly affecting the child and ending with the factors most removed from the child. That is, variables were entered in the order identified above in the description of predictor variables. The order of entry is specified to compare magnitudes of association when various covariates are considered. Attention was paid to selecting predictors that are not highly correlated to enhance the interpretation of the results. In particular, for this reason wages were treated as a single variable in this analysis.

Years of administrative experience of center administrative directors or owner-operators was positively related to quality.

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[5] Interpretation of these results is complicated by the fact that the three wage rates were highly correlated in the sample: an increase in the wages of less-educated staff is generally associated with increases of wages of other types of staff. To better understand the result, we carried out several sensitivity analyses. Including the three wage measures jointly, the wages of the two other groups were insignificant while all three as a group were significant. Including combinations of two wages also revealed that the wage rate of the least educated workers is the significant determinant. When we include one wage variable at a time in the model, the wage of the least educated worker was significant but not the others. Finally, when the wage rate of the least educated workers was excluded (and the model included only the other two wages), the wages included were not significant, either individually or as a group.

Despite differences in the two forms of regression analyses, the results were largely consistent. The simple correlations between each predictor and quality indicated that most of the selected structural variables showed modest, but significant, correlations with quality for the entire sample and within both sectors. The strongest simple correlates using the whole sample were teaching staff wage (r=.33), teacher education (r=.30), early childhood training (r=.30), and labor cost (r=.32). The hierarchical regression accounted for 48% of the variance (R =.48). After adjusting for the other factors the analysis identified the following characteristics as most predictive of child care quality (listed in order of importance): staff-to-child ratio, average teaching staff wage, teaching staff education and training, and the administrator's years of previous experience.

Both the econometric and psychometric analyses found that for-profit centers in the least regulated state provided substantially lower quality even after adjusting for teacher, classroom, and center characteristics that should have accounted for their lower quality. The hierarchical regression analysis showed that church-affiliated centers in all states except California had significantly lower quality than other nonprofit centers in these regression analyses. Finally, there was some evidence that the relations between quality and both staffing ratios and wages were nonlinear, with stronger associations at lower levels of quality. That is, bigger increases in quality should result from improving ratios or wages if the initial quality was poor to mediocre than if it were high.

DISCRIMINANT ANALYSIS

An analysis was performed to identify from a selected set of teacher, classroom, center, financial, and administrative variables, a function which most nearly

Table 4.4

Center Process Quality and State Licensing Standards As of Spring 1993

	CA	CO	CT	NC
Mean Center Process Quality	4.25	3.86	4.34	3.57
State Licensing Standards:				
Minimum Adult-to-Child Ratio				
for Infants	1:4	1:5	1:4	1:6
for 3 year olds	1:12	1:10	1:10	1:15
for 4 year olds	1:12	1:12	1:10	1:20
for 5 year olds	1:12	1:15	1:10	1:25
Minimum Teacher ECE Training				
Director	12 credits ECE classes & 3 cred., admin. Center permit if subsidized	24 credits ECE classes. 24 months experience	1 year supervised exper & CDA cert. (or 12 credits ECE or child development. 1 addtl year experience)	2 years ECE experience.
Teacher (group leader)	12 credits ECE classes	12 credit hours ECE, & 9 months experience; or 3 yrs. experience	Same as director	no preservice requirements (10 hours orientation, 20 clock hrs/yr inservices training)
Assistant (aide)	none	none	High School or equivalent	none
Monitoring of Centers	1 unannounced visit per year	1 unannounced visit/ 2 years; unannounced investigation of complaints	1 unannounced visit/ 2 years; unannounced investigation of complaints	1 announced visit/year; unannounced investigation of complaints

1. These age groupings were chosen for purposes of comparison because these ratios are reported in all 4 states.
2. Not required if teacher or assistant has four year college degree.

Sources: Colorado Licensing regulations 1990
(Who Cares for America's Children, 1990)
North Carolina license regulations 1991
Connecticut Licensing Regulations 1991
Updated by Telephone

classifies centers into poor-, mediocre-, and developmentally appropriate-quality centers. That is, it identifies the variables for which the means among poor-, mediocre-, and good-quality centers are the most different. This analysis classified 64% of the centers into their correct quality classification, which was better than would have occurred by chance. These variables, together, were especially good at identifying poor-quality centers with 79% of the poor-quality centers correctly classified. They were moderately successful at identifying mediocre (56%) and good (56%) centers. The most important variable was the teacher wage rate. Other important variables included, in order of importance: labor cost per child hour, teacher education, specialized ECE teacher training, turnover, preschool fees, hours of operation, adult-child ratio, total cost per child hour, and administrator's education. The importance of wages in this discriminant analysis suggests that at least some of the other variables that affect quality are also correlated with wages. Hence, improving wages might be a strategy for attracting staff with, for example, better education and thereby improving quality.

SUMMARY

These analyses indicate that child care quality is most significantly related to the staffing ratio in the classroom, the education and training of the teaching staff, the wage rate of at least some of the teaching staff, and the prior ECE experience of the administrator. These findings are largely consistent with previous work, affirming the importance of having good staff-child ratios in the classroom and having qualified and well-trained teachers to ensure quality care for children (Hayes et al., 1990). Results also indicate that the magnitude of change in quality related to a reasonable change in any one variable is small.

This study is among the first to provide evidence that the center administrator has an impact on the quality of child care. We considered functions of the administrator in organizing the center in terms of children, children and teachers, and families and the community. Specifically, we looked at the teachers' evaluation of the administrator's effectiveness in work related to center organization, problem solving communication, fiscal matters, curriculum development, work with families, and work in the community. In addition to the positive effect of the ECE experience of the administrator, we found some evidence of the importance of administrative leadership in planning the children's curriculum.

That centers with better staff-to-child ratios and better trained teachers provide better child care is not surprising. Better trained teachers are better prepared to respond to children in a developmentally appropriate manner. Teachers in classes with fewer children per adult have many more opportunities to interact, especially positively, with each child.

The econometric and the hierarchical regression analyses lead to slightly different interpretations about how teaching staff wages are related to child care quality. The econometric result that it is the wages of the least educated staff that affect quality suggests that higher quality centers pay higher wages to effective staff with low education levels than do lower quality centers, so that the wage is a proxy for staff characteristics which we did not measure in this study. The hierarchical model results also found a significant relation between quality and wages, but for wages of all staff, which suggests that nonobserved characteristics may be important for staff at all education levels.

Finally, it should be noted that both analyses explained about half the variance in quality. Although the fit of these data to the estimated models is quite satisfactory, it is nevertheless true that our models have left much unexplained. It is very likely that there are additional variables that affect quality and if some are related to the variables in the model, they could affect the relationship between quality and the predictors we have identified.

States with more demanding licensing standards have fewer poor-quality centers. Centers that comply with additional standards beyond those required for licensing provide higher quality services.

...the proportion of poor-, mediocre-, and developmentally appropriate-quality centers in each state varied with state regulation.

QUALITY FINDING FOUR

States with more demanding licensing standards have fewer poor-quality centers. Centers that comply with additional standards beyond those required for licensing provide higher quality services. However, higher standards may reduce availability of center care or increase cost.

The impact of licensing standards on overall quality of services was studied in two ways. First, the four states—where standards vary considerably—were compared. Second, centers which were required to meet, or were voluntarily meeting, standards more stringent than conventional licensing requirements were compared to all other centers.

In line with previous research this study found considerable evidence linking quality to standards. Table 4.4 shows that standards varied in scope and intensity across the four states, with Connecticut having the most stringent requirements, California the next most stringent, Colorado slightly less stringent, and North Carolina the least stringent. For example, at the time of the data collection, North Carolina allowed 1 adult to every 6 infants, 15 three-year-olds,20 four-year-olds, and 25 five-year-olds; Colorado allowed 1 adult for every 5 infants, every 10 three-year-olds, every 12 four-year-olds, and every 15 five-year-olds; California allowed one adult for every 4 infants, 12 three- to five-year-olds; Connecticut allowed 1 adult for every 4 infants, 10 three- to five-year-olds. With respect to minimum staff training requirements, North Carolina had no minimum requirements for teaching staff, but required 10 clock hours of orientation for new staff, and 20 clock hours of inservice training if a staff person did not have a four-year college degree. In comparison, the other states required at least 12 college credit hours in ECE or a CDA certificate for directors, and at least 12 credit hours of college course work in ECE for teachers (designated as teacher-directors in Connecticut). In accordance with these findings, the proportion of poor-, mediocre-, and developmentally appropriate-quality centers in each state varied with state regulation (see Table 4.1). The least regulated state had a substantially larger proportion of the poor-quality centers (27% of North Carolina centers versus 6% to 9% in the other three states). In contrast, the states with the highest requirements had markedly fewer poor-quality centers (6% in California and 7% in Connecticut) and more good-quality centers (18% in California and 24% in Connecticut, compared to 4% in Colorado and 10% in North Carolina).

Table 4.2 indicates that both the adult-infant ratio and adult-preschool ratio were substantially higher in Connecticut (.33 or 1 adult to 3 infants and .19 or 1 adult to 5.3 preschoolers) than in the other states and lower in North Carolina (.22 or 1 adult to 4.55 infants and .13 or 1 adult to 7.7 preschoolers) than the other states. Similarly, the level of specialized training and formal education of teachers was lower in the least regulated state than in the other three states. Staff tenure at the center was longer in California and Connecticut than in the other two states. This ranking of the states according to licensing standards was seen in almost all analyses of measures of child care process quality. Table 4.1. shows that child care quality was significantly higher on almost all measures of quality in the states with the higher licensing standards and significantly poorer in the state with the most lax child care standards. The overall quality index scaled to the ECERS was significantly higher in Connecticut (Mean=4.3) and California (Mean=4.2) than in Colorado (Mean=3.9) which was significantly higher than in North Carolina (Mean=3.6). With respect to the more specific process measures listed in Table 4.1, the two states with more stringent standards also scored significantly higher on the ECERS and on the Caregiver Interaction Scale than the states with less stringent regulation, and all three states scored higher than North Carolina on the total ITERS score.

Connecticut teachers were rated as more responsive to children than teachers in the other states on the Teacher Involvement Scale.

While there were no significant differences in center quality by sector in the other states, in North Carolina, centers exhibited marked differences in quality between the for-profit and nonprofit sectors. On average, for-profit centers in North Carolina had significantly lower quality than nonprofit centers. This suggests that if standards are stringent, there is little difference in quality across sectors. If standards are not stringent, then sector differences in quality will emerge. Indeed, quality of nonprofit centers in North Carolina was similar to quality for nonprofit centers in the other states, whereas quality scores for for-profit centers were substantially lower. These differences by profit sector will be reported in more detail in Chapter Six.

Stringency of regulation may affect the availability of infant and toddler care in a state. In North Carolina, which allows lower adult-to-child ratios, more centers had infant/toddler classrooms. There were 76 infant/toddler rooms in North Carolina but only 27 in California. This might suggest that higher standards discourage centers from supplying these services. However, there are other possible explanations such as state differences in the proportion of women with infants who work outside the home and in the use of alternative forms of child care. This seems possible since both Connecticut and Colorado had similar proportions of infant/toddler classrooms yet somewhat different child care standards.

Stringency of standards also seems to affect the cost of providing care. Child care was least expensive in North Carolina, the state with the lowest standards. Expended child care costs averaged $2.11 for the whole sample, but in North Carolina they were significantly lower at $1.50. The differential persisted even when costs were adjusted for regional cost-of-living differences[6].

In addition to the effects of state standards on quality, we found other evidence of the positive effect of higher standards on center quality. The sample included 30 centers receiving public funds tied to more stringent standards than state licensing standards. These included ten Head Start, seven public school preschools, five centers with at least 20% of enrollment represented by special needs children, and eight special programs in Connecticut[7]. Table 4.5 compares these and three other special categories of centers (discussed in Finding Five) to the 318 remaining centers in the sample. It also includes means for the publicly supported centers in the sample that were not required to meet higher standards[8].

Compared to centers that were not in one of the special categories identified in Table 4.5, these specially regulated centers with higher standards paid higher wages, and provided higher benefits. Teachers in these centers had more early care and education training, tended to be older, and had longer tenure in their centers. The expended cash costs for these publicly supported centers operating under increased standards was higher ($2.93 per child hour) compared to costs of centers not falling in these special categories ($1.94 per child hour), with labor costs accounting for a greater percentage of expended costs than in these other centers (78% versus 70%). Finally, the quality index and ECERS scores of these centers were higher than in the "other" centers. In comparison, other publicly supported private centers not required to meet increased standards did not have higher costs and revenues, and did not have

Voluntary conformity to higher standards through professional center accreditation also increased the likelihood of higher classroom quality.

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[6] For state comparisons it is often important to deflate the nominal dollar values reported in the text by a regional cost-of-living deflator. In this study this has been problematic because the only deflators available, reported in ***The Statistical Abstract of the United States***, are estimated by the Chamber of Commerce for selected cities and represent living standards for middle management. Because there is no estimate for Connecticut, we used the estimate for Boston but we are not confident in the accuracy of this or the other deflators. The deflators, from 1992, are Los Angeles 124.6, Colorado 100, Connecticut 134.8, North Carolina 98.9.

[7] Two centers serving all special needs children were dropped from the final analysis because their costs exceeded $1,000 per child per month.

[8] Centers were considered publicly supported if at least 50% of their revenue came from public sources.

Three types of centers provide higher than average overall quality. The centers share a financial characteristic of access to extra resources that they use to improve quality.

comparable classroom quality (see Table 4.5). Higher classroom quality seems to hinge on both increased or supplemental standards and higher costs. Standards, therefore, emerge as a powerful correlate of quality, but bring with it higher costs.

Voluntary conformity to higher standards through professional center accreditation also increased the likelihood of higher classroom quality. The 31 centers that were accredited (either at the time of our visit or within the next year) by the National Association for the Education of Young Children (NAEYC) had significantly higher quality than centers not in the high quality groups. Table 4.5 shows that, compared to centers not in the high quality groups, the accredited centers had higher total cost and total revenue per child hour, higher teacher wages, and employed a higher percent of teachers with at least a college degree. Staff-to-child ratios, and tenure were not significantly different between accredited and nonaccredited centers.

QUALITY FINDING FIVE

Three types of centers provide higher than average overall quality. The centers share a financial characteristic of access to extra resources that they use to improve quality.

In our sample, the 28 publicly operated centers, the 16 worksite centers, and the 30 centers with public funding tied to higher standards (the same group cited in Finding Four) provided higher quality care than other centers.

These groups of centers were not themselves homogeneous. Although they each shared a common characteristic that defined the group, there were subgroups within each. For example the publicly operated centers included subgroups with diverse clienteles: the centers in state college and universities served primarily their own students and staff; the other centers in public schools or operated by municipal agencies served mainly "at risk" children—low income children or children for whom English is a second language, or developmentally delayed children.

Table 4.5 describes each of these three groups of centers and compares them with the 318 centers in the remainder of the sample. Because some centers are included in more than one category, the total number of centers in these 3 categories was only 58 centers.

As Table 4.5 shows, with few exceptions, compared to centers not in the high quality groups, these centers had higher expended costs and total revenue per child hour, had more donated resources, and were less dependent on parent fees than other centers; they paid higher wages and tended to provide more staff benefits; they had higher staff-to-child ratios; and teachers in the centers had more education and longer tenure at their centers.

Of special importance, publicly operated centers were as efficient in their resource use as other centers. The econometric cost function estimates (to be described in Finding Seven) showed that publicly operated centers (and nonprofit centers in general) use resources as efficiently as other centers. That is, for a particular level of quality, wage rates, full-time equivalent (FTE) children, and size of facility, the variable cost per child hour is the same as at other centers. Total variable cost in these centers was higher than in other centers, but the difference stemmed from additional resources, apparently devoted to increasing quality.

These results suggest that on average centers that have more in-kind donations or funding from diverse sources are able to use those resources to increase quality. While parent fees are a major source of funds in many of these centers, they do not depend solely on such fees to finance the provision of good-quality service. □

Table 4.5

Quality and Financial Characteristics of Special Groups

Variable Name		Means by Special Catgory					Other Centers[1]
		Public Support with High Reg	Other Publicly Supported	Accredited	Publicly Operated	Worksite	
	N[2]	30	29	31	28	16	318
Structural Quality:							
Midmorning Staff-to-Child Ratio	Mean	0.22	0.20	0.21	0.26	0.23	0.18
	STD	0.16	0.15	0.14	0.15	0.16	0.14
% of Teachers with a B.A. or More	Mean	29	26	36	36	37	27
	STD	18	31	22	21	28	25
% of Teachers with CDA or more	Mean	90	68	89	93	92	73
	STD	21	37	15	20	19	31
Month Tenure (All Staff)	Mean	56	45	37	48	51	38
	STD	45	39	23	35	35	30
Month Tenure (Teachers)	Mean	63	49	44	55	57	42
	STD	53	41	32	44	32	32
Age of Teacher	Mean	38	36	32	37	34	34
	STD	6	8	5	7	8	7
Process Quality:							
Center Quality Index	Mean	4.29	3.70	4.66	4.74	4.76	3.88
	STD	0.89	0.82	0.64	0.67	0.67	0.83
Ecers Total Score	Mean	4.76	3.69	4.98	5.02	5.26	4.05
	STD	0.92	0.90	0.69	0.69	0.72	0.97
Finances:							
Total Cost per Child Hour	Mean	$2.93	$2.06	$2.67	$2.85	$2.71	$1.94
	STD	1.63	1.08	1.04	1.81	1.48	0.98
In-kind donations per Child Hour	Mean	$0.39	$0.24	$0.21	$0.50	$0.93	$0.14
	STD	0.39	0.49	0.30	0.42	1.05	0.28
Total Revenue per Child Hour	Mean	$3.04	$2.18	$2.78	$2.89	$2.88	$2.01
	STD	1.45	1.30	1.07	1.81	1.94	0.96
% of Total Rev from Parent Fees	Mean	20	22	79	36	66	81
	STD	17	15	25	32	23	25
Monthly Preschool fee	Mean	$319	$319	$427	$342	$398	$367
	STD	$140	$154	$145	$148	$165	$111
Wages and Benefits:							
Hourly Wage for Teachers	Mean	$8.63	$6.84	$7.70	$10.84	$10.09	$6.79
	STD	2.69	2.68	2.30	4.29	4.54	1.82
	N	27	23	27	25	14	251
Hourly Wage for Assistant Teachers	Mean	$6.10	$5.29	$5.76	$7.37	$6.98	$5.49
	STD	1.52	1.29	1.13	2.56	2.58	1.05
	N	10.00	7.00	13.00	9.00	7.00	143
Hourly Wage for Teacher-Directors	Mean	$10.35	$9.16	$9.46	$15.42	$14.39	$8.50
	STD	5.21	3.97	5.44	6.4	7.52	3.14
% of Centers with Paid Maternity Leave for Teachers	%	27%	3%	19%	32%	19%	13%
% of Centers with Fully Paid Health I nsurance for Teachers	%	47%	21%	29%	86%	69%	18%
% of Centers with Child Care Discount for Teachers	%	40%	59%	68%	29%	31%	80%

1. Other center includes the category "other pubically supported centers"
2. First sample size given applies to all variables unless otherwise noted.

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Chapter 5
Costs, Revenue, and Support

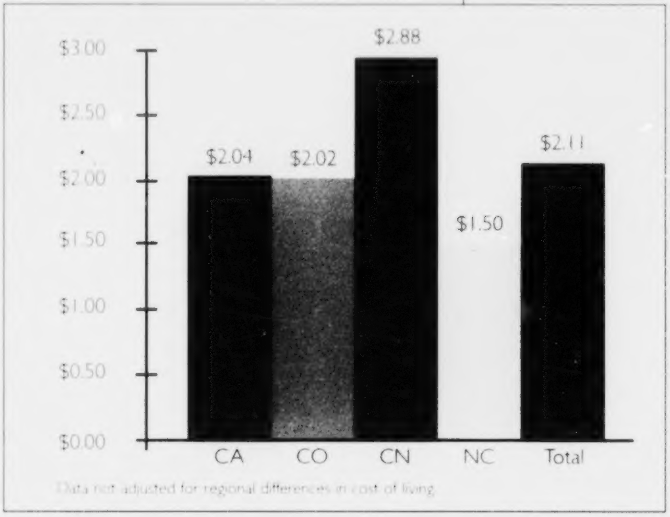
This chapter summarizes information on the financial operation of centers for the sample as a whole and by state. A descriptive analysis compared means by state and by three "scope" variables: percent of children subsidized in a center, percent of enrolled children who were infants or toddlers, and whether or not the center served school-age children. The econometric analysis estimated cost functions (described in more detail below) for the sample as a whole and for subsectors of the industry, providing insight about important interactions, for instance, the effect of the quality of services on costs.

As a prelude to summarizing results, several terms must be defined. In this report, the term *cost* usually refers to the costs of providing (or producing) child care, not the cost incurred by parents or others of purchasing the care. To distinguish between these different ways of looking at cost, we try to use the term *fees* to refer to what the purchasers of child care pay. The term *expended costs* refers to cash costs that are actually incurred to run centers. We use the term *donations* to refer to the goods and services that are donated by individuals and agencies to support child care. These donations—facilities, volunteer services, or other kinds of goods or services—must be included to report accurately all of the costs of providing care. The term *foregone wages* refers to the difference between the wage a staff person could earn in another occupation (based on the person's education, sex, age, race, and marital status) and the person's wage as a child care worker.[9] The term *full cost* refers to the amount it would take to operate centers if all costs were included. The full cost of care equals expended costs plus donations plus foregone wages. Finally, the term total *revenue* refers to the total amount of income received by a center, including fees paid by parents, publicly reimbursed fees, USDA food grants, other public funds, sponsor and other private contributions, and other revenue.

Tables 5.1 and 5.2 provide summary data on costs and revenues. Table 5.1 presents, in the form of a budget, the monthly mean expended costs and revenues for the sample as a whole. Table 5.2 summarizes information on costs, subsidies, and child care affordability by state and profit sector.[10] We summarize some of these results here in an introduction to our discussion of major findings.

Figure 5.1 shows that expended costs were significantly higher than average in Connecticut at $2.88 per child hour and significantly lower in North

Figure 5.1
Expended Cost per Child Care Hour by State



Data not adjusted for regional differences in cost of living

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[9] Foregone wages represent another kind of cost. Child care is a labor-intensive industry dependent on female employees who work for wages below those they could earn, even in other female-dominated occupations, which pay less than comparable male occupations. Regardless of the reason that child care employees accept jobs in the field, centers are using resources that embody human educational investments and work experience that do not show up in center cash outlays. As the industry expands or improves quality or if the national labor market tightens, it may be naive to expect more and more women to continue to work for these lower wages.

[10] In this report, **subsidies** are defined as anything that either reduces the cost of providing care to children, such as in-kind donations, or that allows children whose parents could not otherwise afford care to attend a particular center.

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Carolina at $1.50. California and Colorado were both close to the average at $2.04 and $2.02, respectively. If costs are adjusted for the cost of living in each state (the cost of living in North Carolina and Colorado virtually match the national average), then Connecticut costs drop to $2.13 per child hour and California to $1.62 at Colorado and North Carolina prices (which represent the national average).[11]

Connecticut was the highest labor cost state at $2.23 per child hour and North Carolina the lowest at $1.02. California at $1.42 and Colorado at $1.31 were in the middle. Again, adjusting for cost of living, the difference between states shrinks. Connecticut labor costs would be $1.65 per child hour and California labor costs would be $1.14 per child hour. Overall, labor costs were $.50 per child hour higher in nonprofit centers as compared to for-profit centers.

The descriptive analysis showed that centers that serve subsidized children had higher costs—services for subsidized children were $.74 per child hour more expensive, on average. Similarly, infant/toddler programs cost significantly more—$1.07 more per child-hour than other children's programs.

Table 5.1

A Budget for A Typical Child Care Center: Means Per Child Per Month

Item	All Centers	
	Dollars	**Percent of total**
Expended (Cash) Cost:		
Labor	$289	70%
Occupancy	62	16
Food	19	5
Other Operating	35	9
Overhead	4	1
Total Expended Cost	$409	100%
Revenue:		
Parent Fees	$301	72%
Public Fees	65	15
USDA CAFCP (Food)	8	2
Other Public Funds	27	6
Other Private Funds	25	5
Total Revenue	$426	100%
Surplus or Profit	$17	4%

Elements may not add to totals due to rounding.

COSTS FINDING SIX

Center child care—even mediocre quality care—is costly to provide. Even so, donations and foregone earnings are large, accounting for more than one-fourth of the full cost of care.

On average, the expended costs were $2.11 per child hour to provide mediocre care, $95 per week or $409 per month for 45 hours of care a week (the average number of hours at the center for children in full-time care). In this labor-intensive industry, labor costs accounted for 70% of total expended costs. Facilities costs represented 15%, and all other cash expenses made up only 15% of the total. That expended costs are as low as they are, is due to the use of primarily female employees (97% were women in this sample) who earn even less in child care than women in other occupations.

A comparison of the expended costs of child care with a typical family's income indicates the high costs of producing even mediocre-quality care. The average annual expended cost to provide services for one child was $4,940 per year. This represents 8% of the median U.S. dual-earner family before-tax income of $60,000 in 1993 when both were employed full time, and 23% of the 1993 median before-tax income of $21,000 for families headed by a single parent employed full time (*Statistical Abstract of the U.S.* 1994, pp. 429 and 474). If the centers had to pay market prices for the same resources, the annual full cost per child would be $6,622, 13% of dual-earner family income or 33% of single parent income.

It has long been acknowledged that child care is a subsidized industry, yet the actual costs, dimensions, and implications of these subsidies have not been examined. This study reveals that (1) more than one-quarter of the full cost of child care is covered by foregone wages and donations (see Table 5.2); (2) donations and foregone wages vary by state and sector; and (3) donations and foregone wages affect cost and quality of center services.

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[11] See footnote 6 on the problems of comparison of dollar values across states.

The mean full costs of producing center child care services in our sample was $127 per week or $2.83 per child hour; this is $32 per week or $.72 per child hour more than expended costs. Figure 5.2 shows the breakdown of full cost. Most of this additional $.72 per hour of costs represents (1) contributions of workers in foregone earnings and benefits, representing 19% of full costs ($.54 per child hour); (2) occupancy donations, which averaged 5% of full costs ($.14 per child hour); and (3) volunteer services and donated goods, which represented 2% of full costs ($.06 per child hour).

Table 5.3 compares mean hourly wages of child care center staff with wages earned by other members of the labor force with the same level of education, and the same age, gender, and marital status. It shows that center teachers earned, on average, $7.22 per hour compared to their counterparts' market wage of $9.97 per hour, which represents an annual foregone income of $5,238. The table indicates that 93% of teachers and assistant teachers are underpaid. This, in essence, is a subsidy from center staff, because children are receiving care from people who embody levels of training and education much higher than that reflected in their wages.[12]

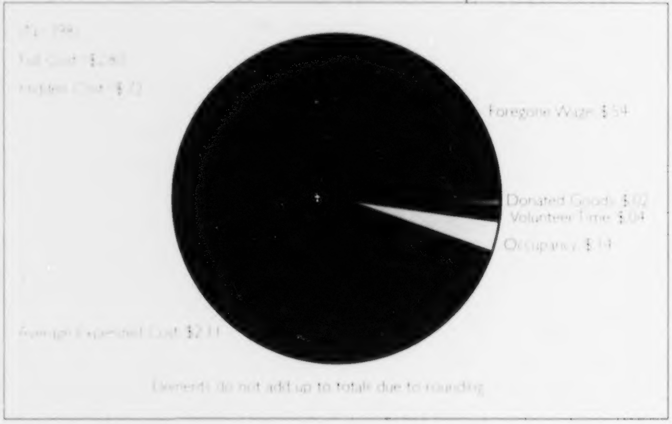
It appears that foregone earnings are higher in Colorado and lower in Connecticut than in other states even after taking regional differences in cost of living into consideration. When foregone wages are adjusted for cost of living differences, or calculated as a percent of prevailing wages in the state, they may also be lower in California. At least in Connecticut where quality is relatively high, child care staff are giving up less real income and are being paid closer to market value. The high wage subsidy in Colorado may help account for lower relative quality in that state, despite the relatively high staff education and state standards. Higher-quality programs in our study also paid workers more than lower-quality programs, but still paid below the market wages for the people they hired. Even in higher-quality programs teachers are providing some wage subsidy to the full cost of care. Foregone earnings were also greater in centers with a larger percent of infants and toddlers enrolled.

Occupancy costs represent the second greatest area of hidden costs or in-kind donation. Including rent subsidies, operating expense subsidies, discounts and outright gifts of space—in-kind occupancy cost donations averaged about $.14 per child hour or 7% of the expended costs of care.

Volunteers account for a third area of hidden costs or in-kind donation. Though substantially less than subsidization provided by employees, volunteer time accounted for $.04 per child hour or 2% of expended costs, and volunteers performed services that centers could not otherwise afford. Interestingly, only 39% of centers used volunteers—52% of nonprofit centers and 26% of for-profit centers. For those centers that did, the mean value of the services was estimated at $310 per month, and the most common volunteer service was as a teaching assistant.

Center child care...is costly to provide. Even so, donations and foregone earnings... account for more than one-fourth of the full cost of care.

Figure 5.2
Full Cost of Child Care per Child Hour



Elements do not add up to totals due to rounding

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[12] It should also be remembered that the market wage for women as compared to men is low—there is a differential of approximately 23% between wages of females and males.

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Donated goods, such as food, supplies, and insurance, accounted for the fourth area of hidden costs, amounting to about $.02 or 1% of expended costs. Though donations and staff foregone earnings are hidden from public view, governments and families rely on child care providers to obtain such subsidies and to give up their own wages and benefits to provide care and education to America's children. If there were no liabilities from these donations and foregone earnings, it could be contended that their effect is to spread the costs of child care among parties and keep it to a level that parents can afford. However, in their current form these hidden costs may have a negative effect on quality. Child care workers' low wages and benefits do lower the cost of care, but they also help account for high staff turnover (in this study 39% among teachers and 52% among assistant teachers), and staff instability damages the quality of child care. Second, occupancy donations drive expenditures of real dollars. Where there are occupancy donations, as in nonprofit centers, the dollars that would have been spent on occupancy can be allocated elsewhere. With limited occupancy donations, as in for-profit centers, dollars that could be devoted to other areas—like wages—need to be expended on occupancy. This can have a direct effect on quality. In Connecticut, the state with the highest quality child care, the facilities donations to for-profit centers ($.20) were similar in magnitude to facilities donations to nonprofit centers in the other states ($.14 to $.21 per child hour). Connecticut nonprofit centers received occupancy subsidies ($.38 per child hour), twice as high as in other states.

COSTS FINDING SEVEN

Good-quality services cost more, but not a lot more.

Our results indicate that there is a positive but moderate relation between cost and quality of center child care. Estimated

Table 5.2

Full Cost, Subsidies, Revenues and Parents' Cost Of Center Care Per Child Hour By State and Sector

	Means for State and Sector								Total Sample	Percent of Full Cost
	CA		CO		CT		NC			
	NP	P	NP	P	NP	P	NP	P		
Cost per Child Hour:										
Full Cost of Care	$2.86	$2.63	$2.85	$2.75	$4.07	$3.45	$2.38	$1.67	$2.83	100%
Less Staff Foregone Earnings	0.55	0.51	0.70	0.74	0.44	0.61	0.45	0.36	0.54	19
Equals Cost with In-kind Donations	2.32	2.11	2.24	2.07	3.66	2.85	1.93	1.31	2.31	82
Less In-kind Donations	0.30	0.05	0.23	0.04	0.48	0.26	0.23	0.02	0.20	7
Equals Expended Center Costs	2.02	2.07	2.01	2.03	3.18	2.59	1.71	1.30	2.11	75
Revenues per Child Hour:										
Total Revenue	$2.09	$2.20	$2.08	$2.07	$3.24	$2.67	$1.74	$1.43	$2.19	77
Less Cash Contributions	0.84	0.07	0.92	0.33	1.46	0.32	0.91	0.28	0.64	23
Equals Parent Fee Payments	1.25	2.13	1.16	1.74	1.78	2.35	0.83	1.15	1.55	55
Less Income Tax Credit	0.17	0.24	0.15	0.20	0.17	0.27	0.13	0.16	0.19	7
Equals Net Parent Cost	$1.08	$1.89	$1.00	$1.54	$1.60	$2.07	$0.70	$0.99	$1.36	48

Numbers may not add to totals due to rounding differences in costs between poor-, mediocre-, and high-quality centers tended to be small when the relation between costs and quality were examined in two ways.

First, the total expended cost (excluding donations) to provide one child hour at poor-quality centers, at mediocre-quality centers, and at developmentally appropriate centers were compared for the entire sample in an analysis of variance including state, quality, and state quality interactions as the predictors. The mean difference between mediocre-quality (averaging 4.0) and developmentally appropriate centers (averaging 5.5) was $.25 per child hour for the entire sample or $.37 per child hour in California, $.15

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13. The samples of good-quality centers were small and therefore subject to distortions caused by a single anomalous center.

Table 5.3

Staff Wage Rates, Market Wage for Alternative Employment, and Percent Earning Below Their Market Wage: 1993 Current Dollars

		CA	CO	CT	NC	TOTAL
	N	99	97	97	99	392
Teachers:						
Hourly wage	Mean	$8.59	$6.06	$8.62	$5.61	$7.22
	SD	2.44	1.28	2.46	1.23	2.39
Hourly market wage for alternative employment	Mean	11.25	9.89	10.76	7.99	9.97
	SD	2.21	1.55	2.10	1.14	2.19
Foregone wage per hour	Mean	2.67	3.83	2.14	2.39	2.75
	SD	2.49	1.36	2.34	0.88	1.99
Percent earning below market wage	Mean	88%	98%	87%	96%	93%
Assistant Teachers:	N	76	92	89	68	325
Hourly wage	Mean	6.12	4.99	6.59	5.03	5.70
	SD	1.32	0.96	1.50	0.79	1.38
Hourly market wage for alternative employment	Mean	8.95	7.76	8.40	7.14	8.08
	SD	1.71	1.97	1.36	1.32	1.75
Foregone wage per hour	Mean	2.83	2.77	1.80	2.11	2.38
	SD	1.76	1.77	1.62	1.22	1.68
Percent earning below market wage	Mean	91%	97%	86%	95%	93%
All Teaching Staff:	N	100	100	100	100	400
Hourly wage	Mean	8.07	5.95	8.05	5.50	6.89
	SD	2.03	1.20	2.25	1.08	2.08
Hourly market wage for alternative employment	Mean	10.77	9.29	10.01	7.83	9.47
	SD	1.61	1.39	1.48	1.00	1.76
Foregone wage per hour	Mean	2.71	3.33	1.97	2.33	2.58
	SD	1.82	1.35	1.78	0.92	1.59
Percent earning below market wage	Mean	89%	97%	85%	96%	92%
Administration Directors:	N	56	57	46	65	224
Hourly wage	Mean	13.96	9.12	13.73	9.29	11.33
	SD	4.15	3.32	5.71	3.90	4.83
Hourly market wage for alternative employment	Mean	15.37	12.45	14.40	11.03	13.16
	SD	4.06	2.19	2.78	2.53	3.42
Foregone wage per hour	Mean	1.47	3.29	1.00	1.73	1.92
	SD	5.05	3.18	5.39	3.86	4.43
Percent earning below market wage	Mean	66%	85%	56%	62%	68%

Hourly wage, hourly market wage, and differences are all means of center means. Percent earning below market wage is percent of all staff members in the category.

Good-quality services cost more, but not a lot more.

in Colorado, $.30 in Connecticut, and $.16 in North Carolina.[13] The differences in expended cost per child hour between poor-quality centers (averaging 2.6) and mediocre-quality centers were even smaller—less than half as much as between mediocre and good quality.

Second, we estimated the costs associated with increasing quality based on the cost function analysis. In this econometric analysis, the cost function related center variable costs to wages of staff of different skill levels, hours of child care provided to three different age-groups of children, child care quality, the physical size of the center, and volunteer hours. The total variable cost includes expended costs (except for facilities cost) plus donations and the imputed salary of owner-operators. Extrapolating from this model, we estimated the cost associated with raising center quality from the mean score of 4.0 to 5.0, the lowest score in the developmentally appropriate range, a 25% increase in quality. This model suggests that increasing quality by 25% from a mean of 4.0 to a mean of 5.0 would increase total variable costs about $18,048 per year for an average center, or $.13 per hour per child. This estimate assumes that the space in centers, the wages rates paid to staff with a given education, and the hours of care provided by centers remain constant. This same analysis also indicated that it costs more to increase quality when quality is already relatively high.

The Total Variable Cost Function

The major technique for studying the relations between cost and quality of child care, and for examining other characteristics of the cost of providing services, was the estimation of total variable cost functions. *Variable costs* are the costs that change with the volume of services provided in the short-run when the amount of physical space available is fixed. Thus, total variable cost excludes rent or mortgage payments which are fixed costs in the day-to-day operations of the centers. In this study, total variable cost includes the value of donations which represent resources used to provide services as well as an imputed value of the services of owner-operators who do not take a salary.

The variable cost function shows the relation between the level of variable cost and the variables identified in economic theory which affect short-run cost: the market prices of the variable inputs and the amount of services provided. In relation to child care centers, if wages drop, cost per child hour will drop; however, the center might increase the hours it is open, thereby increasing the number of hours of service provided. This also might change variable cost per child hour. The variable cost function gives the relation between changes in variable cost per child hour and the other variables in the equation. The model estimated in this study summarizes the relationship between total variable costs per child hour and the following explanatory variables: the wage rates for staff with high school education or less, with some college, and with at least a college degree; the hours of infant care provided, the hours of preschool care provided, and the hours of care provided to school-age children; the inside square footage of the center, the quality index, and a set of variables related to location, sector, program scope, and public funding. As noted in Chapter One, the function is estimated as a translog form which allows great flexibility in the form of the relationship between variable cost per child hour and its determinants.

There is some possibility of an interaction between staff wages and center quality in the cost function. That is, if it is necessary to raise wages in order to increase quality, then the cost of increasing quality may be higher than our estimate. We specified the model by using wages based on three levels of education to minimize this problem. The center can increase its quality by hiring more staff and/or changing its staff composition in favor of highly educated workers. Either action would increase center quality and increase center costs, the wage rates being constant. This is because a substitution of more educated workers for less educated ones and hiring more workers would increase the wage bill, even if the wage rates remain intact.

Given this framework, there are still three possible reasons why wages and quality could interact in the cost function: (1) in a tight labor market, it may be necessary to raise wages to hire staff with any given education level; (2) a wage increase per se may increase the quality of workers, and therefore, center quality; (3) changes in wages may affect quality and cost simultaneously. To test for these possibilities we carried out a series of analyses. Those tests indicated little relationship between quality and wage rates for staff of a given education level.[14] Thus, we are confident that the weak but positive cost-quality relation represents an accurate view.

This finding that costs of providing services in developmentally appropriate centers is only about 10% higher than the cost of providing mediocre care seems to contradict results reported in Finding Three. The production function estimates indicate fairly small effects on process quality of increasing the staff-child ratio, staff education, administrator experience. This means it would take a fairly large (and probably unrealistic) change in any one of these variables, or even in all of them taken together, to increase quality from mediocre to good. Such changes would be expensive. Thus, the cost of increasing structural quality up to developmentally appropriate levels would be substantial through these procedures, even assuming that more staff members can be hired at current wage levels for their level of education and experience. This suggests that the qualities or characteristics which enable centers to provide good-quality care relatively inexpensively are not included in our quality production function. These may be factors which are not reflected in cost such as personality traits of staff, commitment of the staff to providing good-quality services, and effective teamwork which is necessary in a smoothly functioning center.

Two other findings based on the cost function analysis are noteworthy. First, we found that centers are quite responsive to changes in wage rates of different classes of staff. They reduce the amount of hours of labor employed if the wage rate of that type of labor increases and substitute between different categories of staff to produce the same amount of services of the same quality. They switch from one type of labor to another.[14] In particular, there seems to be considerable substitution back and forth between teachers and assistants, depending on wage rates. This is one indication that centers take action to keep costs down.

Second, we found no evidence of what we call economies of scope. That is, we were interested in studying differences in variable cost per child hour based on the comprehensiveness of the program offered—the number of different age-groups of children served. We hypothesized that it may be more cost-effective to serve the broad range of children from infants through school-aged children. In fact, in our econometric regression analysis we found no evidence that centers that provide services to all age-groups have lower variable costs per child hour than programs that specialize in serving only one or two age-groups.

COST FINDING EIGHT

Center enrollment affects costs.

Both the size of a center (in terms of its total enrollment) and the intensity of use of existing facilities affect cost per child hour. The number of child hours provided by a center affects the cost per child hour in two ways. First, there are the short-run *decreasing average costs*. That is, average variable cost per child hour decreases with an increase in total child hours provided by the center. This is called the short-run because the size of the center (its legal capacity) is fixed; there is not enough time to increase the physical space. Second, there are long-run *economies of scale*. That is, average total costs per child hour are lower for centers with larger total enrollments. This means that, compared to smaller centers, larger centers designed to serve more children provide similar quality care at a lower cost per child hour.

Center enrollment affects costs.

The interaction between center size and costs and quality could be of particular interest to policy makers and economists.

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[14] Our results indicated that centers were not operating in a tight labor market. Empirical results of the study support the assumption that centers can attract new workers at their prevailing wages. Over 80% of center directors indicated that they did not offer higher wages to newly hired workers. Furthermore, 50% of the center directors reported increasing wages by less than 3% in the last year and only 12% reported raising them by more than 6%.

In addition to higher staff ratios and higher percentages of more educated staff, some argue that quality can also be enhanced by simply paying higher wages. This may be true if higher wages increase worker morale and thus worker productivity, all else being constant. To entertain the hypothesis of the dependence of quality on wages, we modeled a two step procedure, where center quality is determined by wages and other center and staff characteristics. The produced quality is then used as an input into the cost equation. The results remained the same.

Finally, centers may increase (or decrease) their level of quality as a response to variation in prices (such as wages). Then quality should be treated as a short-run decision variable, similar to hours of service provided. The model was modified to allow for this possibility by adding interaction terms between quality and other inputs and outputs. Those terms were generally insignificant and their addition did not affect the coefficients in the rest of the model significantly.

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...a typical center could reduce its variable costs per child hour using the same physical space and providing the same quality by expanding the child hours of service provided.

To minimize cost while achieving developmentally appropriate quality in child care, centers must approach efficient size levels. If care is provided in centers that are larger or smaller than optimal size from a cost standpoint, then the child care system will be more expensive than it need be. Of course, in any given situation, centers may not be able to operate at their cost minimizing size because they may not be able to attract enough children to operate at an optimum size, given their niche in the market.

Short-run decreasing costs exist if a given increase in the hours of service provided by the center generates a proportionately smaller increase in costs in the short run (where the center cannot change its physical space). Hence, decreasing costs means that variable cost per child hour decreases as total center child hours provided increase. Center short-run total variable cost function estimations showed that short-run decreasing costs existed. That is, the results showed that using the same facility space and providing the same level of quality, if on average a center increased its total child hours of service by 10 percent, its total variable costs went up only by 6 to 7.5 percent and average variable costs went down by 3%. Hence, a typical center could reduce its variable costs per child hour using the same physical space and providing the same quality by expanding the child hours of service provided.

In the long run, where centers can increase or decrease their amount of space, costs may react differently to expansions in hours of service. Scale economies imply that the total cost of all inputs increases less than proportionately to increases in number of hours of services provided. Estimation of precise long-run scale economies requires a model where physical space can be altered. This involves including the price of the physical space in the cost function, instead of the square footage. Nonavailability of the market price of physical space for each center (especially for nonprofits using donated space) prevented us from obtaining direct estimates of the long-run scale economies. Nevertheless, using the estimated short-run cost function, we can make inferences about the magnitude of the long-run scale economies. The procedure is similar to the one that is used to calculate the short-run returns, but takes into account the relationship between total variable costs and the physical space. The estimated parameters of the cost function indicated that there were economies of scale even in the long run, where centers could adjust the use of all inputs, although these economies were smaller than in the short run.

To test approximately for whether average total expended costs (including fixed facility costs) decrease as center size increases, we examined mean total costs in small, medium, and large centers. The descriptive analysis of differences between means showed that total expended costs declined substantially as center size increased. Small centers (less than 40 FTE children) averaged $2.62 per child hour. Medium-sized centers (40-80 FTE children) averaged $2.05 per child hour. Large centers (more than 80 FTE children) averaged $1.86 per child hour. The reduction in cost was most pronounced in California and least in North Carolina, with Colorado and Connecticut falling in the middle. On average, centers with 40 or more FTE children were 10% less expensive in total cost per child hour, without significant loss of quality and centers with more than 80 FTE were 20% less expensive. Analysis of variance, holding state and state by size interactions constant, indicated that there was a significant difference in total expended cost by FTE enrollment.[15] In this particular sample, the difference in total expended cost per child hour between medium and large centers was greater and more significant than between small and medium size centers.

[15] While statistically significant, the differences in LS mean values (which are adjusted for state level differences) of total expended cost per child hour by size of center was much smaller: $2.29 for small centers, $2.15 for medium sized centers and $1.90 per child hour for large centers.

Quality did not differ significantly between these three sizes of centers.[16] Because size of center is not significantly related to quality, our results suggest that many centers are operating at less than optimal size. An implication of this result is that something other than cost and quality (as defined in our study) is keeping centers from growing to a more efficient size. Possible explanations include lack of demand in a specific market, or owner preferences, or parent perceptions or preferences about quality that do not correspond to the quality measures we used. For instance, parents may prefer smaller centers.

COST FINDING NINE

Cash payments from government and philanthropies represent 28% of center revenue and demonstrate a social commitment to share the expenses of child care.

For many parents, child care expenses take a large bite out of their income, yet parents alone are not paying for care. On average, parents are actually paying about half of the full cost of child care, with shortfalls being made up by a patchwork of in-kind subsidies such as donated facility space or materials, free labor from volunteers, and, particularly, low staff wages (or staff willingness to work for less than their apparent market value) as well as cash contributions, government funding, and tax credits.

The existence of these various subsidies which reduce the fees paid by parents provide evidence that we already consider basic child care services a merit good, a service children need regardless of their family's ability to pay. More likely, we help subsidize care because of it's collective good aspect—because of the external social benefits from intervention programs for at-risk children or from inducing AFDC mothers to find work in the paid labor force. Whether the motivation is altruistic or utilitarian, we are willing to help pay for the services. Cash philanthropy contributions, public funding, child care tax credits, donations of in-kind services, and foregone wages all help reduce what parents pay for child care.

Table 5.2 gives a comparison of the full cost of care and the net cost to parents, as estimated in this study. The table shows the effect on production costs of each major kind of subsidy: staff foregone earnings; in-kind donations; cash contributions from philanthropies, government, and others; and the child care income tax credit.

For the whole sample, including families whose child care is subsidized, parent payments to centers accounted for 71% of center revenue and 55% of the full cost of care. This represented, on average, $1.55 per child hour or $70 per week (for a 45-hour week, the average time a full-time child spent at centers in this sample). As Table 5.2 shows, the full costs of these services averaged $2.83 per child hour and the expended cost averaged $2.11 per child hour. About 25% of the full cost of care represented donations and foregone earnings of staff which lower the centers' expended costs. Finally, cash contributions and government funding accounted for 29% of center revenues and more than 23% of the full cost of care.

Parents' net outlay for child care is less than their contribution to center revenues, however, because most parents are eligible for the federal dependent care tax credit ranging from 20% to 30% of their child care payments, depending on income levels. The calculations on Table 5.2 are based on the assumption that parents on average qualified for the 20% tax credit for the first $2,400 per year of fees, or $.21 per child hour (20% of $200 per month/193 hours per month). As 20% is the lowest level of credit for any working parent, these calculations are conservative. For any given center

Cash payments from government and philanthropies ...represent 28% of center revenue.

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16. In addition size was not a significant factor in determining quality in the quality production function described in Finding Three.

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this credit was modified (upward) by the fraction of children that were part time and (downward) by the fraction of children that were subsidized by public agencies. Based on these estimates, the average family received a tax credit of $.19 per child hour (approximately $445 per year) which was a factor in reducing parent costs to $1.36 per child hour or 48% of the full cost of care.

Parents' payments are higher for those who pay the center's full fee, and in for-profit centers where there are fewer donations and where parent fees represent a higher percent of center total revenue. Parents who paid full tuition pay, on average, $1.92 per child hour for preschool fees, or $86 per week. If such families take the federal child care tax credit available to them, this represents another government contribution, reducing parent expense by an estimated average of $.21 per child hour. In for-profit centers, parent fees represented almost 90% of center total revenue, $1.84 per child hour, and 70% of the estimated $2.62 per child hour of the full cost of care. In nonprofits, because a smaller percentage of parents paid full tuition, parents paid on average $1.25 per child hour or about 40% of the full cost of care, which in that sector amounted to $3.04.

Chapter 6
Sector Comparisons

As we pointed out in Chapter Two, child care centers operate in a mixed market composed of private nonprofit centers, nonprofit publicly operated centers, and centers owned or operated for profit. The existence of nonprofit centers reflects long-standing public and philanthropic willingness to support provision of child care as a merit good or a collective good. However, market performance can be affected by the fact that in the child care market centers with different kinds of financial structures co-exist and compete, particularly with respect to the cost and quality of services. For this reason, we intentionally built into the study procedures for investigating the comparative performance across sectors.

One focus of the research was to compare cost and quality of child care between for-profit and nonprofit sectors. This is evident in the study methodology. For instance, to describe findings—the categories of data related to center structure, classroom structure, overall process quality, wages and wage policy, financial characteristics, and child outcomes—we tested for differences between mean values of for-profit and nonprofit centers in each state. In the econometric analysis of short-run costs and of the determinants of process quality, and in our hierarchical regression analysis of quality, we included control variables related to sector and auspice.

In addition to comparing the nonprofit and for-profit sectors, to gain further insight into the impact of sector, we compared sub-groups of centers within the for-profit sector and within the nonprofit sector. Nonprofit centers were separated into three auspice types: (1) 76 church-affiliated centers that were either operated by or affiliated with churches; (2) 28 publicly operated centers owned and operated by municipalities, school districts, or colleges and universities; and (3) 96 other private nonprofit centers which we call independent nonprofits. For-profit centers were separated into three categories: (1) 124 independently owned, (2) 25 centers which were part of local chains, and (3) 48 centers which were part of systems operating in multiple states. Another 4 for-profit centers were worksite centers; they were included in our analysis of worksite centers. Comparisons were made on four sets of center characteristics: (1) center structure; (2) wages, personnel policy, and staff characteristics; (3) cost, revenue, subsidies, and fees; and (4) structural and process quality characteristics.

Some sector analysis was included in the econometric estimation of cost and quality functions, and in the hierarchical regression analysis of quality. Variables were included in these analyses to control for profit status and for given types of centers, specifically for church-affiliated centers and centers that were part of national systems.

This chapter summarizes major findings about the similarities and differences between for-profit and nonprofit centers. It also discusses findings related to the subsectors or auspices in each sector. Data are presented in several tables. Tables 6.1 to 6.4 show mean values of center structural quality, process quality, and financial characteristics by sector. Tables 6.5 to 6.7 give similar information for the six auspices. These results will contribute to our understanding of the relationship between profit status and quality in new ways, in part because of the inherent nature of the study, and in part because of intentional attempts to understand comparative performance within the sectors.

There are differences between the for-profit and nonprofit sectors. Overall quality of service, however, is not significantly different between the two sectors except in the one state with very lax licensing standards.

SECTOR FINDING TEN

There are differences between the for-profit and nonprofit sectors. Overall quality of service, however, is not significantly different between the two sectors except in the one state with very lax licensing standards.

Table 6.1

Center Structure Characteristics for Nonprofit and For-profit Centers

Center Structure Characteristics	Mean Values			
	N	Non-Profit 200	For Profit 201	All 401
Number of Years in Operation***	Mean	16.2	10.5	13.3
	Sd	14.7	8.5	12.3
Total FTE Children Enrolled***	Mean	60	76	68
	Sd	39.7	51.7	46.8
Percent Change in Enrollment Last Year	Mean	2	7	5
	Sd	30	18	24
Percent of Centers Accredited	%	7	8	8
	Sd	26	28	27
Mean Hours Open per Day***	Mean	10.9	11.3	11.1
	Sd	1.26	0.88	1.10
Percent of Infants & Toddlers**	Mean	18	25	22
	Sd	23	23	23
Percent of Centers with Before and After Care for School-Age***	%	47	72	59
Number of Different Programs Offered***	Mean	3.3	4.2	3.7
	Sd	1.54	1.29	1.48
Percent Turnover of Teachers*	Mean	32	46	29
	Sd	60	53	57
Percent Turnover of Administrative Directors	Mean	14	19	16
	Sd	34	44	38
Percent of Subsidized Children***	Mean	34	13	23
	Sd	39	17	32
Percent of White Non-Latino Children***	Mean	60	76	68
	Sd	35	25	31
Number of Children on Center Waiting List**	Mean	47	20	35
	Sd	114	34	90
Percent of Centers Using Volunteers***	%	52	27	39

Significance Levels: ***p=.001 **p=.01 *p=.05

CENTER STRUCTURE

Table 6.1 compares center structure characteristics for nonprofit and for-profit centers. With respect to center structure characteristics, for-profit centers tended to be larger, to be expanding faster, and to serve more infants/toddlers and school-age children. They tended to be open more hours per day and have more programs (e.g., summer camps, before- and after-school care, part-day programs). Nonprofits tended to have longer waiting lists and to have been in operation longer. They served more subsidized and ethnically diverse populations. Table 6.2 shows that administrators who worked in nonprofit centers had more education, more training in early childhood education, and more prior experience. A larger percentage of nonprofit centers used volunteers.

CENTER QUALITY

Comparisons of the quality of for-profit and nonprofit centers across the four states indicated that structural quality varied with profit status but that process quality was not significantly different between sectors except in the least regulated state. Table 6.2 shows that, with respect to structural quality characteristics, staff-to-child ratios in preschool rooms were higher in nonprofit than in for-profit centers. Teachers had more specialized training and formal education in nonprofit centers, they had longer tenure at the center and lower turnover rates (Table 6.1). Assistant teachers in nonprofit centers did not have more training but they did have more prior experience

With respect to differences in overall quality, analysis of the many measures of process quality indicated that nonprofit and for-profit centers were not reliably different except in North Carolina, where for-profit centers provided much lower quality care. The mean quality indices and the ECERS scores were significantly different between nonprofit and for-profit centers, controlling for state. However, this difference was due primarily to the dramatic differences in mean scores in North Carolina between for-profit and nonprofit centers. On the quality index, North Carolina nonprofits (Mean=4.05) scored close to the sample mean (Mean=4.02), but the North Carolina for-profits (Mean=3.18) scored more than one standard deviation below the sample mean. The difference was most dramatic for the caregiving factor where the average score for North Carolina nonprofit centers was 4.5 compared to only 3.2 for for-profit centers. Findings were similar for the infant/toddler (ITERS) score where there was no significant difference in quality by sector except in North Carolina. Similar results were also obtained for the observations of teacher sensitivity, harshness and detachment using the Caregiver Interaction Scale. Permissiveness played a roll in Connecticut only, with teachers in nonprofit centers displaying more permissiveness than teachers in for-profit centers. Results from the Teacher Interaction Scale related to adult involvement with children did show a significantly higher proportion of responsive involvement of teachers with children in nonprofit than in for-profit centers.

These results indicate that process quality was comparable in nonprofit and for-profit centers in states with adequate to high regulations, contradicting much past research. Results of this study suggest that both nonprofit and for-profit centers are providing mediocre care on average, but that the quality of this care is not different by sector if the state has adequate regulations. In contrast, we saw very marked differences in quality between nonprofit and for-profit centers in the state with the most lax regulations.

Although quality levels may not differ between sectors, quality may be produced in different ways in the two sectors. As noted in Chapter Two, economists assume that for-profit and nonprofit centers should be motivated by different overall objectives (for-profit centers try to maximize profits and nonprofit centers are organized for other purposes). Therefore, it would be reasonable to expect that the two sectors try to achieve quality in different ways. In the econometric estimation of the quality production functions described in Chapter Four, Finding Three, a number of tests were performed to determine whether the nonprofit sector and for-profit sector were governed by the same structure. We tested to see if the variables that were employed to explain quality

Table 6.2

Process Quality and Structural Quality Indicators for Nonprofit and For-profit Centers

		Mean Values		
		Non-Profit	For Profit	All
	N	200	201	401
Process Quality Indicators[1]				
Weighted Process Index, Scaled to ECERS***	Mean	4.16	3.87	4.02
	SD	0.84	0.85	0.86
	N	192	193	385
ECERS Total Quality Score***	Mean	4.39	4.05	4.22
	SD	0.96	0.99	0.99
	N	81	138	219
ITERS Total Quality Score	Mean	3.55	3.35	3.42
	SD	1.09	1.03	1.05
Structural Quality Indicators	N	98	147	245
Staff-to-Child Ratios for Infants and Toddlers (Midmorning)	Mean	0.26	0.25	0.26
	SD	0.10	0.10	0.10
	N	195	190	385
Staff-to-Child Ratios for Preschoolers (Midmorning)***	Mean	0.15	0.13	0.14
	SD	0.06	0.06	0.06
Administrators Percent with B.A. in ECE or More	Mean	69	55	62
	SD	46	48	47
Administrators Percent with B.A. or More***	Mean	77	61	69
	SD	42	46	45
Administrators Number of Years of Prior Experience*	Mean	8.4	6.9	7.7
	SD	7.09	6.40	6.78
Teachers Years of Education**	Mean	14.4	14.0	14.1
	SD	1.34	1.36	1.36
Teachers Percent with B.A. or More*	Mean	39	33	36
	SD	33	32	32
Teachers Months of Tenure***	Mean	53	36	44
	SD	41	27	35
Assistant Teachers Percent with CDA or More	Mean	48	45	46
	SD	36	37	36
Assistant Teachers Number of Years Prior Experience***	Mean	2.3	1.2	1.8
	SD	3.5	1.7	2.8

1. The weighted quality index would not differ significantly between for profit and nonprofit centers if North Carolina were excluded.
2. Standard deviations are listed beneath each mean value.

Significance Levels ***p<.001, **p<.01, *p<.05

had equivalent interpretations across nonprofit and for-profit centers. The results showed that as a whole, we could not reject the hypothesis that both sectors are governed by the same "quality production" framework. However, there was some indication that there are a few variables with differential impacts on quality.[17] For example, teaching staff tenure at the center was a significant determinant of quality in the nonprofit sector, whereas only administrator's tenure was significant in the for-profit sector. Similarly, a high percentage of infants/toddlers lowered center quality in the for-profit sector. In contrast, the hierarchical regression analysis showed no evidence that suggested that the for-profit and nonprofit centers differed in the relation between these structure measures and quality.[18]

CENTER FINANCES

With respect to financial characteristics of centers, while both sectors paid low wages, Table 6.4 shows that nonprofit centers paid relatively higher wages for all job classifications than did for-profit centers. Furthermore, staff foregone earnings were lower in the nonprofit sector, which means that staff in this sector were paid wages somewhat closer to the wage they could earn at other jobs, given their education, gender, age, ethic origins, and marital status.

Sector similarities and differences in costs and revenues are shown in Table 6.3. Nonprofit center expended costs were about 12% higher than for-profit center costs overall, excluding the value of donations. The distribution of costs was different between the two sectors, with labor representing 79% of total cost in nonprofits but only 62% in for-profits. Food cost was also higher in absolute and percentage terms in nonprofit than for-profit centers. All other costs were higher in for-profit centers. The for-profit sector occupancy costs were higher than nonprofit costs. For-profits spent more than twice as much on occupancy costs as the nonprofits, raising for-profit costs by $.24 per child hour relative to non-

Table 6.3

Budgets for Typical Nonprofit and For-profit Child Care Centers, Means Per Child Per Month

ITEM	Nonprofit		For-Profit	
	Dollars	Percent of total	Dollars	Percent of total
Expended (Cash) Cost:				
Labor***	$339	79%	$239	62%
Occupancy***	37	9	86	22
Food***	21	5	16	4
Other Operating**	30	7	40	10
Overhead	3	1	5	1
Total Expended Cost*	$430	100%	$386	100%
Revenue:				
Parent Fees***	$243	55%	$359	88%
Public Fees***	91	21	38	9
USDA CAFCP (Food)***	13	3	3	1
Other Public Funds***	53	12	0	0
Other Private Funds***	43	10	7	2
Total Revenue*	$443	100%	$407	100%
Surplus or Profit	$13	2.9%	$21	5.1%

1. Elements may not add to totals due to rounding.
2. Asterisks indicate that nonprofit differs from for-profit at the following significance levels:
***p<.001 **p<.01 *p<.05

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[17] Standard Chow tests to investigate structural differences between sectors revealed that as a group the sectors are governed by the same structure. However estimating one model for nonprofits and one for for-profits and allowing some coefficients to vary between sectors (by including interaction terms between sector dummies and the explanatory variables) revealed that the coefficients of some of the variables differ significantly between sectors.

[18] These results were obtained in an analysis that jointly tested all possible interactions between each of the structural components and process quality for the two sectors.

profits, and offsetting half of the for-profit sector's labor cost advantage.

For-profit centers spent larger portions of their budgets on space, while nonprofits spent larger portions of theirs on labor. Even when space subsidies were included in occupancy costs at our estimate of their value, for-profits still spent more on their facilities than nonprofits. Three explanations emerge: perhaps nonprofits are constrained by the particular space that is donated to them, perhaps for-profits view space as a more effective marketing tool than better qualified staff per dollar spent on either, or perhaps they treat it as an investment property and therefore choose to spend their budgets on their facilities.

Table 6.3 shows that total revenue was also about 10% higher in nonprofits than for-profits; however, profit rates on income were not significantly different between sectors. Table 6.1 shows that fees per month were significantly higher in for-profits than in nonprofit centers. However, because hours per child were also higher, fees per child hour were not significantly different by sector.

Econometric estimation of total variable cost functions (which include donations and the imputed salary of owner-operators) showed no significant difference in variable cost per child hour between the two sectors for the same number of hours of service (size of center), wages paid, quality, and amount of physical space. This means that for the average center, both sectors seem equally efficient in their allocation of resources in the sense that the variable cost per child hour is not significantly different for centers with similar FTE enrollment and quality. This also means that there is no indication of important structural differences in the production process of providing child care in the two sectors. The fact that there are lower average total expended costs per child in the for-profit sector implies that the higher expended costs and revenues in nonprofit centers permit higher staffing ratios and wages.

SUMMARY

Our findings regarding sector differences in structural quality and wages corroborate earlier studies that report higher quality measures and wages in nonprofit centers as compared to for-profit centers (Kagan & Newton, 1989; Phillips & Howes, 1987; Whitebook, Howes, & Phillips, 1989). In most previous studies, a strong relationship was found between structural

Table 6.4

Fees and Wages for Nonprofit and For-profit Centers

		MEAN VALUES		
		Non-Profit	For Profit	All
	N	200	201	401
Fees:				
Full-time Monthly Infant Fee Charged by Centers**	Mean	$435	$462	$451
	Sd	174	166	169
Full-time Monthly Preschool Fee Charged by Centers*	Mean	$358	$384	$372
	Sd	123	102	113
Preschool Hourly Fee (Monthly Fee/Hours of Care)	Mean	$2.01	$2.05	$2.03
	Sd	0.83	0.66	0.75
Staff Wages Paid by Centers:				
Hourly Wage for Teachers***	Mean	$7.83	$6.62	$7.22
	Sd	2.78	1.75	2.39
	N	166	159	325
Hourly Wage for Assistant Teachers***	Mean	5.97	5.43	5.70
	Sd	1.55	1.11	1.38
	N	138	86	224
Hourly Wage for Administrative Directors***	Mean	12.22	9.89	11.33
	Sd	5.08	4.03	4.83

Infant Fee: Nonprofit N = 188 For-profit N = 196 Total N = 384 Significance Levels ***p<.001; **p<.01; *p<.05

quality measures (such as staff-to-child ratio and teacher qualifications) and process quality (overall center quality) measures. Indeed, in this study, as pointed out in Finding Three, our models indicated that quality is related to staffing ratios and teacher education. Therefore, the finding that overall quality does not vary between sectors except in North Carolina is surprising and needs to be explained. Our results indicate that other center characteristics, in addition to those captured in our econometric analysis, affect quality. These characteristics may differ between sectors and explain our findings. For instance, differences in management or leadership may affect cost and quality differentially in the two sectors. Our statistical analyses of quality explains only about half of the variance in quality among centers. Although these estimates are robust in identifying important relations between structural and process quality, they still leave much to be explained. Findings eleven and twelve will also suggest reasons for this apparent anomaly.

SECTOR FINDING ELEVEN

Within each sector, particularly the nonprofit sector, there is variation by subsectors in center characteristics and quality.

To gain more insight into the profit and nonprofit sectors we compared the characteristics of the subsectors or types of auspice within each sector. We divided the nonprofits by auspice: (1) independent nonprofit, (2) church-affiliated nonprofit, and (3) publicly operated nonprofit. We divided the for-profits by auspice: (1) independent for-profits, (2) local chains, (3) and national systems.

The three types of for-profit and three types of nonprofit centers were compared

Table 6.5

Auspice Financial Characteristics

		Nonprofit				For-Profit			
		Independent	**Church**	**Public**	**All**	**Independent**	**Local Chain**	**National Chain**	**All**
	N	97	78	28	198	124	25	48	197
Center Costs per Child Hour:									
Labor Cost	Mean	$ 1.85	$ 1.35	$ 2.39	$ 1.71***	$ 1.25	$ 1.23	$ 1.07	$ 1.20
	Sd	1.03	0.62	1.02	0.95	0.67	0.80	0.56	0.66
Total Expended Cost	Mean	2.43	1.67	2.76	2.17***	1.97	2.07	1.95	1.98
	Sd	1.14	0.75	1.11	1.08	0.90	1.33	0.94	0.97
Full Cost	Mean	3.27	2.53	3.35	2.99***	2.54	2.82	2.53	2.58
	Sd	1.49	0.99	1.24	1.33	1.09	2.15	1.31	1.32
Revenue and Support:									
Revenue from Parent Fees	Mean	1.22	1.46	0.91	1.28*	1.82	1.97	1.81	1.84
	Sd	1.12	0.70	0.84	0.96	0.93	1.12	0.97	0.96
Public Support	Mean	1.00	0.21	1.65	0.76***	0.22	0.16	0.19	0.20
	Sd	1.18	0.42	1.16	1.07	0.30	0.24	0.22	0.27
Total Revenue	Mean	2.49	1.75	2.83	2.24***	2.08	2.16	2.00	2.07
	Sd	1.21	0.72	1.36	1.13	0.88	1.11	0.92	0.92
In-kind Donations	Mean	0.29	0.26	0.58	0.31***	0.07	0.07	0.01	0.05
	Sd	0.39	0.25	0.42	0.36	0.21	0.23	0.02	0.19
Proportion of Centers Using Volunteers	Prop.	0.59	0.41	0.61	0.52*	0.35	0.16	0.13	0.27*
	Sd	0.49	0.5	0.5	0.5	0.48	0.37	0.33	0.44

Significance Levels: ***p<.001, **p<.01, *p<.05. These refer to significance between auspices within sectors.

in separate ANOVAs. In both sets of analyses, the four states were collapsed into two categories: California and Connecticut where state licensing standards are higher, and Colorado and North Carolina where they are lower. Two-way ANOVAs were conducted for both for-profit and nonprofit subsectors and the two regions to test the difference between mean values for four sets of characteristics: center structure, wages and benefits, cost and revenue, and structure and process quality.

The findings overall affirm that within-sector variation is as great as cross-sector variation. In addition, they indicate that: (1) variation by subgroups within sectors is systematic, with the church-affiliated subsector more closely resembling centers in the for-profit sector than its own; and (2) there is greater variation within the nonprofit subsector than within the for-profit subsector on characteristics related to center quality.

FOR-PROFIT SECTOR DIFFERENCES

Tables 6.5 - 6.7 show that there is considerable homogeneity among the three auspices within the for-profit sector. They did not differ significantly in their labor cost and total expended costs per child hour, revenues per child hour, and structure and process quality. National systems did, however, differ from local independent centers and local chains in some respects. They were larger, serving more FTE children than independent for-profits (105 FTE children versus 58 FTE). They operated at lower capacity utilization than either independent or local chain centers (in California and Connecticut centers enrollment in national systems was only 78% of legal capacity). They offered more staff benefits such as partially (but not fully) paid health insurance and maternity leave, and all of these centers offered staff child care discounts.

Mean wages for teachers and for all teaching staff were lower for centers in national systems than for other for-profit

Within each sector, particularly the nonprofit sector, there is variation by subsectors in center characteristics and quality.

Table 6.6

Auspice Wages and Benefits

		NONPROFIT				**FOR-PROFIT**			
Wages and Benefits	N	**Independent** 97	**Church** 78	**Public** 28	**All** 198	**Independent** 124	**Local Chain** 25	**National Chain** 48	**All** 197
Hourly Wage for All Teaching Staff	Mean	$ 7.21	$ 6.68	$ 10.34	$ 7.36***	$ 6.59	$ 6.65	$ 5.65	$ 6.37*
	Sd	2.16	1.48	3.50	2.39	1.68	1.54	0.86	1.55
Hourly Wage for Teachers	Mean	$ 7.72	$ 6.80	$ 11.49	$ 7.79***	$ 6.82	$7.02	$ 5.79	$ 6.60*
	Sd	2.41	1.50	4.07	2.75	1.79	1.87	1.22	1.73
	N	495	474	99	1068	646	265	481	1392
Foregone Earnings for Teachers	Mean	$ 5033	$ 5438	$ 1268	$ 4864***	$ 5282	$ 5855	$ 5895	$ 5603*
	Sd	4815	4140	5850	4779	4788	5005	5673	5156
Fully Paid Health Insurance for Teachers	% Centers	34%	29%	91%	39%***	10%	12%	2%	8%
	Sd	48	45	29	49	30	33	14	27
Partially Paid Health Insurance for Teachers	% Centers	48	29	22	38*	33	48	81	47***
	Sd	5	45	42	49	47	51	39	50
Paid Maternity Leave for Teachers	% Centers	20	10	35	18	5	4	38	13***
	Sd	40	31	49	38	22	20	49	33
Staff Child Care Discount	% Centers	58	79	26	62***	79	92	100	86*
	Sd	50	41	45	49	41	28	0	35

Significance Levels: ***p<.001 **p<.01 *p<.05

centers (mainly in California and Connecticut). This suggests that, at least in some regions, the national systems keep their total labor costs in line with other for-profits by substituting benefits for wages. This difference in policy may also account for our finding that teacher foregone earnings were higher for centers in national systems than for independent for-profit centers in these two states.

NONPROFIT SECTOR DIFFERENCES

The nonprofit sector is less homogeneous; indeed, there are important differences among subsectors, mainly because the performance of church-affiliated centers differed considerably from other nonprofits. Compared to the other two nonprofit sectors, church-affiliated centers had lower staff-to-child ratios, lower levels

Table 6.7

Auspice Quality and Enrollment

		Nonprofit				**For-Profit**			
		Independent	**Church**	**Public**	**All**	**Independent**	**Local Chain**	**National Chain**	**All**
	N	97	78	28	198	124	25	48	197
Process Quality:									
Weighted Process Index, Scaled to ECERS	Mean	4.18	3.92	4.74	4.14***	3.91	3.70	3.82	3.86
	SD	0.85	0.77	0.66	0.83	0.87	0.83	0.82	0.85
	N	91	77	22	190	117	24	43	189
ECERS Total Quality Score	Mean	4.42	4.14	5.04	4.38***	4.00	3.96	4.15	4.03
	SD	0.98	0.90	0.69	0.95	1.03	0.84	0.94	0.98
Structural Quality:									
Staff-to-Child Ratio (Midmorning)	Mean	0.21	0.18	0.26	0.21**	0.17	0.15	0.15	0.16
	SD	0.13	0.18	0.16	0.16	0.13	0.08	0.11	0.12
Teachers' Education in Years	Mean	14.5	14.0	15.0	14.3**	14.0	14.1	13.8	13.9
	SD	1.4	1.2	1.1	1.3	1.5	1.2	1.1	1.4
Assistant Teachers' Education in Years	Mean	12.8	12.8	13.2	12.8	12.9	12.7	13.1	12.9
	SD	1.6	1.2	1.1	1.4	1.1	1.3	1.0	1.1
	N	64	54	16	134	25	18	42	85
Administrators' Education in Years	Mean	16.6	16.0	17.4	16.44**	14.4	15.6	15.4	15.1
	SD	1.6	2.0	0.8	1.8	2.2	1.4	1.7	1.9
Percent of Teachers with CDA or More	Mean	82%	77%	92%	82%*	70%	84%	69%	71%
	SD	26	[illegible]	22	26	35	26	27	32
	N	81	62	21	164	97	22	36	155
Percent of Asst. Teachers with CDA or More	Mean	50	41	58	48*	42	47	51	45
	SD	37	33	35	36	38	36	36	37
Percent of Administrators with B.A. in Early Child Care Education or More	Mean	68	64	90	69	59	50	45	54
	SD	46	47	30	46	46	48	50	48
Enrollment:									
FTE Children Enrolled	Mean	59	62	64	60	58	118	105	77***
	SD	41	30	58	40	43	67	37	52
Percent Capacity Utilization	Mean	83%	79%	86%	81%	84%	88%	78%	83%*
	SD	20	18	25	20	19	21	17	19
Percent of Subsidized Children	Mean	46	11	61	0.34***	13	8	14	12
	SD	42	20	38	39	18	12	16	17

Significance Levels: ***p≤.001 **p≤.01 *p≤.05

of trained and educated teachers, a smaller percentage of assistants with at least a CDA, less educated administrators, lower staff wages, and lower labor cost and total expended cost per child hour. More importantly, they had lower overall quality. Also, full cost of care per child hour was significantly lower in church-affiliated centers ($2.53) than in independent ($3.27) and publicly operated centers ($3.35). A higher percent of total revenue (about 83%) came from parent fees. Subsidized children represented smaller percentages of enrollment, a smaller percentage of centers used volunteers, and they made more use of child care discounts to staff. In most of these respects, these centers seem to resemble for-profit centers more closely than centers in the nonprofit sector.

Other noteworthy variations existed within the nonprofit sector. Publicly operated centers as distinct from church-affiliated and independent centers, for example, had directors with more education and 90% of administrators had at least a bachelor's degree in a field related to early care and education. Publicly operated centers had higher donations and public financial support, and higher quality than other nonprofit centers. They also provided more outside space for children (not shown on the tables). Wages for teachers and for all teaching staff were higher in publicly operated centers than in independent and church-affiliated centers; consequently, foregone earnings were lower in the publicly operated centers, although alternative market wages were not significantly different. Publicly operated centers provided better benefits than did independent nonprofits which in turn provided better benefits than did church-affiliated centers with the exception of childcare discounts. Since the full cost of care in the publicly operated centers was similar to that of the independents, it appears that donations in publicly operated centers are used to offset costs, enabling payment of better salaries to workers.

REGRESSION ANALYSIS RESULTS

The econometric and hierarchical regression analyses revealed that—after adjusting for the human capital, classroom structure, center structure, and administrator's characteristics—there is some evedence that church-affiliated centers produced lower quality than other nonprofits. There is also some evedence that national chains produced higher quality relative to all for-profit centers, but not in comparison to all centers. Both of these results varied from state to state. Quality was significantly lower among for-profit centers in the least regulated state. Similarly, lower quality was observed among church centers than among independent nonprofit or public centers, even after adjusting for all other predictors. In interpreting these results, it should be noted that even the auspice designations such as church-affiliated and national systems are not truly homogeneous. Some church-affiliated centers did resemble other nonprofit auspices, and centers in some national chains provided consistently higher quality than centers which were part of other national systems.

These findings dispel the notion that quality (or lack thereof) is crisply aligned with a particular sector. To the contrary, these findings suggest that it is difficult to associate any given level of quality with a sector overall; rather, levels of quality may be more clearly aligned with subsectors. The similarity in quality between church-affiliated centers and for-profit centers partially explains why we found such little difference in overall quality between for-profit and nonprofit centers. Along with other findings in this study, it suggests that a more useful categorization of centers by quality would be between those that rely primarily on parents fees and those which tap other sources of finances to improve quality. ☐

These findings dispel the notion that quality (or lack thereof) is crisply aligned with a particular sector.

Chapter 7
Economic Facts of Life

As we look at ways to improve quality of center child care, it is important to keep in mind the economic reality of these local markets. In Chapter Two we looked at center child care in the context of a competitive local service market to suggest ways that market competition could affect cost and quality of center child care. We characterized the market for child care as monopolistically competitive because a large number of providers are competing to sell a set of services that are different from center to center, but are also close substitutes for each other. In such markets, price competition forces producers to keep their prices in line but permits some flexibility in pricing since each seller offers a slightly different set of services. Producers must try to keep costs low in order to make a profit, but, in fact, their rate of return on investment is usually quite low. This is because the relative ease of entry into the market by new producers creates a continual pressure which often results in existing producers operating at less than their full capacity.

We also outlined peculiarities of the child care market demand and supply that could affect market performance: the costs and quality of services. The fact that this is a regulated mixed market with services provided by nonprofit and for-profit centers made it essential for us to design the study to look at differences in performance of the two sectors. The potential for misinformation on the part of purchasers and the belief that child care should be a merit good made it important to study consumer preferences and the market response to these preferences. Study results provide some clues about how market forces affect cost and quality. This chapter summarizes these findings.

ECONOMICS FINDING TWELVE

Characteristics of the market setting for child care, notably market competition and subsidy dependence, affect center finances. For-profit and nonprofit centers face different competitive conditions that can affect their performance.

This study indicates that certain economic facts of life exist in center child care markets that have an impact on center finances and possibly performance. These facts of life are: (1) stiff competition in local markets; (2) greater dependence in the nonprofit sector on donations and cash contributions from philanthropies and government; (3) greater dependence of the for-profit sector on parent fees; and (4) different distributions of costs in the for-profit and nonprofit sectors.

THE EFFECTS OF COMPETITION

This study provides evidence of strong competition in local markets among child care centers. In a highly competitive market, what economists call a monopolistically competitive market, we would expect to find some product differentiation, similar fees, significant turnover of firms, excess capacity, and low rates of profit. We found evidence related to most of these characteristics.

First, centers in for-profit and nonprofit sectors charge similar fees per child hour. Mean for-profit center fees in this study averaged $22 and $41 per month more than nonprofit centers, depending on the age group served. However, for-profit centers were open longer hours, so the fees per hour were not significantly different between sectors. Even though there is considerable variation in fees within sectors, on average the difference in fees charged in for-profit and nonprofit

...market competition and subsidy dependence, affect center finances. For-profit and nonprofit centers face different competitive conditions that can affect their performance.

...centers are earning low rates of profits on income, and probably on their investment in the enterprise

centers in the same state is quite small. Second, on average, centers operate at 82% of maximum legal capacity. The average center enrolls 68 FTE children out of a legal capacity of 85 FTE, approximately 15 empty spaces per center. We found no significant differences in the ratio of enrollment to maximum legal capacity by state or profit status. We also estimated capacity utilization by the ratio of actual to preferred enrollment; the mean percent was 91% which leads to an estimate of 77 FTE as the mean preferred enrollment, or an average of 7 vacancies per center.[19] Nonprofit centers had a lower ratio of preferred to maximum capacity, mostly due to North Carolina nonprofit centers, which operated at considerably higher staff: child ratios in their infant and toddler rooms than required by law (.26 actual ratio compared to .17 required ratio).

A large number of centers were operating at full capacity with waiting lists, particularly in California nonprofit centers. A large number of centers were also operating with vacancies, and the centers at full capacity tended to have higher quality. The financial drain on many centers due to existing vacancies is a serious problem, even if a certain proportion of empty spaces merely represents normal turnover of clients. The cost advantage of operating at full capacity was identified in Finding Eight above where we identified decreasing costs related to operating at full capacity. These results suggest that purchasers of care do discriminate in choosing centers by level of quality, but that they may not have the choice to purchase good-quality services. This may indicate that nonprofit centers with good-quality care ration their services through waiting lists rather than by increasing their fees.

Third, centers are earning low rates of profits on income, and probably on their investment in the enterprise. Nonprofit centers had a mean surplus of $.06 per child hour and for-profits a profit of $.095 per child hour; these are not statistically significant differences. These figures are 2.7% and 4.4% of total revenue, respectively. We did not collect information on center capital investment, but we can make a first approximation about rates of return of investment. The average for-profit center had an annual surplus or profit of $12,700. If the average center facility of 5,000 square feet costs $70 per square foot to build, the mean annual surplus or profit would be less than a 4% return on this $350,000. That is, for-profit centers' capital investment appears to be somewhat more than one year's revenue; therefore, the percentage return on capital is lower than the percentage return on sales.[20] Even taking into consideration the interest on the capital that is incorporated in the lease or mortgage payment, the 2.7% profit on sales (less than 4% of capital) is very low. The average corporate profit rate on sales (before taxes) has been about 9% in recent years (*Economic Report of the President*, 1993, p. 361). The profit rate may be understated, but the average center probably earns less than 4% over interest on borrowed money.

Fourth, this study yielded little information on center turnover, the movement of centers in and out of a market. In 1993, when we undertook the study 26% of the sample centers had been in operation five years or less. We have anecdotal evidence that some centers went out of business within a year of the initial data collection. When we called back centers to involve children in the outcomes portion of the study, we found that several centers had closed. Furthermore, professionals in the field argue that child care businesses are particularly susceptible to downturns in the economy.

[19] There is some problem using actual to preferred capacity ratio, but we are not sure how directors interpreted "preferred ratio." Thirty percent of directors reported operating above their preferred maximum, which suggests that their preferences did not take into consideration economic considerations. Also the ratios may be biased upward because we collected the data room by room, which means that unused rooms would be counted in the legal maximum capacity but not in our measure of preferred maximum.

[20] The low rate of return on the child care services suggests that for-profit centers may rely on property value appreciation. If the owner of the building also owns the child care business, potentially the owner also makes capital gains on building appreciation. Alternatively, if the child care center is renting the building, their rate of return on capital could be high because they have invested little in the business.

Fifth, as is stated in Finding Ten, the econometric estimation of cost functions for each sector indicates that nonprofit and for-profit centers are operating with similar degrees of efficiency. That is, the cost functions for nonprofit and for-profit centers cannot be distinguished from each other statistically. If one uses the standard economics assumption that for-profit centers minimize costs in order to maximize profits, then nonprofit centers are also minimizing their costs, given the level of quality and number of child hours provided.

In sum, the center child care market appears to exhibit many classic characteristics of a monopolistically competitive market. In particular, although there is a great potential for differentiating services, nevertheless, services are close substitutes from one center to the next. Thus, there is some but not a great deal of flexibility in raising fees to meet increased expenses. There is also a great incentive for centers to try to operate at full capacity even though many centers seem to face vacancies. High quality centers tend to operate at full capacity and face excess demand for their services. Many of these are nonprofit centers which cannot easily expand.

NONPROFIT CENTER DEPENDENCE ON DONATIONS AND CASH CONTRIBUTIONS

As noted in the introduction to Chapter Six, nonprofits benefit from in-kind donations of volunteer services, materials, and most importantly, donations of facilities in the form of free or discounted rent, utilities, and maintenance. These in-kind donations reduce expended costs and allow these centers to move more of their budget expenditures into labor expenses.

Nonprofit centers also rely on cash subsidies that reduce the costs of services to parents. This resource does not come automatically; it requires administrators in nonprofit centers to demonstrate managerial competence to gain access to these subsidies. Cash and in-kind contributions act as a market buffer in the nonprofit sector, making the nonprofit centers' longevity less contingent on parent fees. However, the fortunes of nonprofits dependent on contributions are subject to political climate and any other forces that affect donor contributions.

FOR-PROFIT DEPENDENCE ON FEES

In the for-profit sector, there is a heavy reliance on parent fees. Indeed, about 88% of revenue in the for-profit sector is accounted for by parent fees (in contrast to 55% in the nonprofit sector). This means that the for-profit centers must satisfy their parent clientele if they wish to stay in business.

DIFFERENT DISTRIBUTIONS OF COST

The distribution of costs differs between for-profit and nonprofit sectors. For-profits do not usually have access to in-kind donations, although some for-profit centers, mainly in Connecticut, do receive donations. On average, for nonprofit centers donations represent $.31 per child hour, compared to $.05 per child hour for for-profit centers. Because occupancy subsidies were rare in the for-profit sector, for-profits spent a larger percentage of total costs on facilities (22%) compared to nonprofit centers (9%). Furthermore, for-profits cannot raise fees very much to compensate for higher facilities costs, because they would price themselves out of the market. As a result, they have less to spend on labor costs and indeed did spend less on labor (62% in the for-profits as compared to 79% in the nonprofits). Spending smaller amounts on personnel could lower the quality of services provided, other things being equal.

FOR-PROFITS HAVE THE ADVANTAGE OF LARGER SCALE OF OPERATION

For-profit center enrollment is 10% higher than nonprofits, mainly because centers that are part of local chains and national systems are so much larger than other centers (111 FTE) compared to the sample mean (68 FTE). For-profits

...the center child care market appears to exhibit many classic characteristics of a monopolistically competitive market.

There is evidence of inadequate consumer knowledge which creates market imperfections and reduces incentives for some centers to provide good-quality care.

may also take advantage of decreasing costs that come with more intensive use of their existing capacity; however, this only shows up indirectly in our data. There was no significant difference in capacity utilization rates by sector, but for-profits operated longer hours and provided before- and after-school programs and summer programs more often. The larger size and more intensive use of the facility reduces cost per child hour (see Finding Eight). This may allow for-profit centers to operate at lower average costs which, in turn, would enable them to compete successfully with their nonprofit counterparts at a given level of quality. This phenomenon may partially account for our finding that, despite lower staff-to-child ratios and less qualified staff, for-profits provided comparable quality of care to nonprofit centers in three states.

Nonprofit centers dependent on donated facilities may not have the option of increasing their size to take advantage of economies of scale. Possibly the quality of space is a constraint for for-profits, if parents base decisions on the appearance of the center. Such preferences for attractive surroundings may explain high facilities expenditures for for-profit centers.

SUMMARY

We are now in a position to make sense of our somewhat contradictory findings about sector similarities and differences. First, in this study the standard structural quality characteristics—staffing ratios, staff training and education, staff tenure—are significantly greater in the nonprofit sector than the for-profit sector. Second, despite these higher structural quality characteristics, the nonprofit sector does not produce significantly higher process quality except in North Carolina. Third, our econometric analysis indicates that there are no significant sector differences in the cost functions and quality production functions, meaning that services and the quality of services are apparently produced similarly in the two sectors. Fourth, the quality production function for the whole sample shows that staffing ratios, teacher education, at least the wages of the least educated staff, prior experience of the administrator, and possibly teacher tenure at the center are all significantly related to providing good-quality services. How, then, can it be that the nonprofit sector provides the same quality as the for-profit sector?

The major explanation is that the church-affiliated centers have significantly lower quality than the other two nonprofit auspices: independent nonprofit and publicly operated centers. The for-profit centers and the church-affiliated centers have both lower structural and process quality than the other two nonprofit auspices: church-affiliated and for-profit centers are not statistically different in terms of structural and process quality measures.

Our econometric findings indicate that, in general, centers across sectors use the same general methods. This implies that the independent nonprofits and publicly operated centers choose to produce higher quality with more and higher quality resources, and that church-affiliated and for-profit centers tend to choose lower staffing ratios and less educated, lower paid staff to produce lower quality services. In economics jargon, these two sets of centers are operating on different parts of the same production and cost curves.

There may also be some differences in the production of quality services across auspices, within sectors. On average, centers which are part of local and national for-profit chains are significantly larger than other auspices. Because of economies of scale, these centers may be somewhat more competitive in providing quality because they are bigger and have lower costs. That is, they may be able to provide a given level of quality care at a lower cost per child hour than smaller centers because of their size. Finally, it should be remembered that the quality production function explained only 50% of the variance in quality of child care.

In this finding we emphasized an important difference in costs between for-profit and nonprofit centers—the higher fixed costs of facilities in for-profit centers. This difference did not show up in our estimate of short-run cost functions, because facilities costs are not a short-run cost. However, it appears that they also do not affect the production of quality even though the higher facilities cost requires for-profit centers to use lower staffing ratios and to pay lower wages. That this does not affect quality of services more than seems to be the case in this study may also be due to economies of scale which permit for-profit chains to produce a given quality of services at a lower cost per child hour. For-profit center ability to produce quality with lower labor costs per child hour may also be due to other investments in quality made by owners of large complexes of centers, that may, for instance, develop effective quality control systems.

ECONOMICS FINDING THIRTEEN

There is evidence of inadequate consumer knowledge which creates market imperfections and reduces incentives for some centers to provide good-quality care.

The importance of parents as the primary decision makers in choosing child care is generally accepted. Our society relies upon parents to be discriminating consumers of child care and to act as informal monitors of program quality. It is well known that efficient markets require that buyers as well as sellers be fully informed. However, the belief that parents can make informed choices to maximize children's opportunities for positive development has been questioned (Browne Miller, 1990; Holloway & Fuller, 1992; Kagan & Neville, 1992; Shinn, Phillips, Howes, Galinsky, & Whitebook, 1990). This is because parents generally report being satisfied with the care of their children receive (American Federation of State, County and Municipal Employees, 1987; Kontos & Wells, 1986; Whitehead, 1989; Willer et al., 1991). However, in this study and in other assessments of child care programs, the average child care center has been shown to offer mediocre- to poor-quality programs which may well not meet the developmental needs of children.

One explanation for parents' satisfaction with what child care professionals consider low-quality programs is that parents do not value the same aspects of care that are valued by ECE professionals (Blau, 1990). Another explanation is that although parents value the same aspects of care that early childhood professionals do, they are not well informed about the care their children receive (Browne Miller, 1990; Mitchell, Cooperstein, & Larner, 1992; Cryer, 1989; Fleming, 1989; Shinn et al., 1990). They may assume that their values are represented in the child care they purchase and may be unable to judge the actual quality of the program. As pointed out in Chapter Two, the parents are consumers who make judgments based on imperfect

Table 7.1

Parent Importance Scores, Parent Quality Ratings and Observer Quality Ratings for ITERS/ECERS Item Types

		Parent Importance Score [1]	Parent Quality Rating [2]	Observer Quality Rating [2]
Infant/Toddler:				
Health	Mean	2.92	6.20	3.16
	Sd	0.15	0.00	1.17
Safety	Mean	2.88	6.04	3.58
	Sd	0.16	0.82	1.32
Interactions	Mean	2.93	6.27	3.96
	Sd	0.14	0.86	1.26
Other Items	Mean	2.73	5.91	3.36
	Sd	0.27	0.86	0.98
Total	Mean	2.84	6.07	3.47
	Sd	0.17	0.47	1.07
Preschool:				
Health	Mean	2.86	6.09	4.30
	Sd	0.23	0.87	1.10
Safety	Mean	2.89	6.25	4.72
	Sd	0.19	0.82	0.95
Interactions	Mean	2.88	6.13	4.33
	Sd	0.19	0.89	1.27
Other Items	Mean	2.69	5.88	4.02
	Sd	0.27	0.92	0.99
Total	Mean	2.79	6.03	4.27
	Sd	0.20	0.56	0.98

1. Possible scores are 1-3 with 1 as the lowest score.
2. Possible scores are 1-7 with 1 as the lowest score. These scores are comparable to the 7 point scale used in reporting ECERS/ITERS and the overall quality index evaluation described in Chapter Four.

information about the product they are purchasing.

To test these alternative explanations, we collected data from parent surveys on parents' values related to child care and on their knowledge of the quality of care their child was receiving at the center. Our results suggest that parents overestimate the quality of care their children receive and thus do not demand higher quality child care because they believe they already have it. This may account for the prevalence of mediocre-quality, particularly in centers dependent on parent fees.

Separate questionnaires were constructed for parents of preschool and infant/toddler classrooms. These parent surveys asked parents to rate how highly they valued each of the aspects of quality of care that trained observers evaluated using the ECERS and ITERS instruments, and asked them to evaluate their child's classroom on these same characteristics. Only parents of children in the observed classrooms were asked to complete the survey. Questionnaires were returned from 76% of the infant/toddler classrooms and 78% of the preschool classrooms. A total of 727 parent surveys, or approximately 56% of parents with children in the infant/toddler classrooms, and 2,407, or approximately 31% of parents with children in the preschool classrooms, responded to the parent questionnaires.

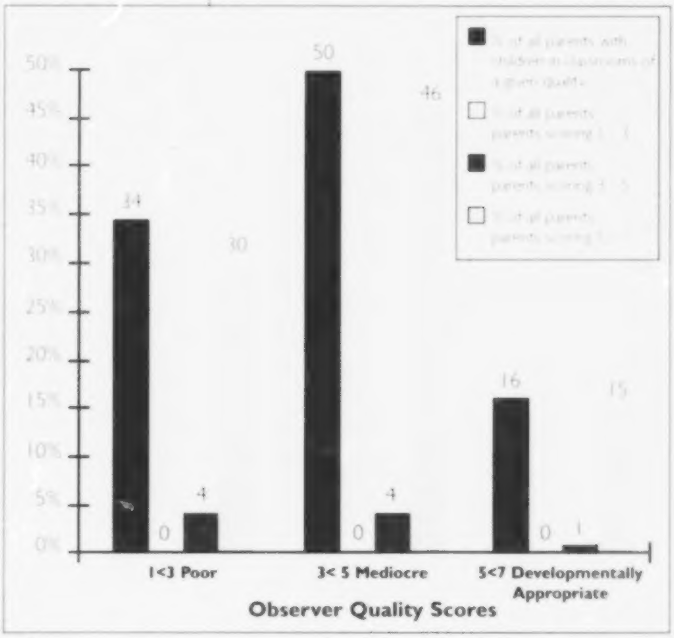
Results of the parent survey shown in Table 7.1 show that parents place high value on the aspects of good-quality care found in the ECERS and ITERS. When parents were asked to indicate the importance of each item on the survey using a scale rating from 1, "not important," to 3, "very important," all items for both infant/toddler and preschool questionnaire versions received high importance scores. The mean total importance scores for all items on the ITERS (infant/toddler) survey was 2.84; on the ECERS (preschool) survey it was 2.79. Parents of infants/toddlers tended to value most highly those aspects of quality that were related to adult-child interactions and health, while parents of preschoolers valued safety and teacher-child interactions aspects most highly.

While parents said they value the characteristics of good-quality care, they substantially overestimated the quality of services their children were receiving. When asked to report how well their child's classroom did on the ECERS and ITERS aspects of quality, 90% of parents rated program quality between 5-7, indicating that they thought their child's classroom was in the developmentally appropriate (high) range. This is in direct contrast to the mostly poor to mediocre quality ratings of trained observers who were present to observe what happened to children through most of a typical day. For the infant/toddler group, the mean parent quality score was 6.1 while the trained observer mean was 3.5. The parent mean for the preschool group was 6.0, while the observer mean was 4.3.[21]

Figures 7.1 and 7.2 show the percent of parents with children in classrooms of poor, mediocre, and developmentally appropriate quality as assessed by trained observers. For each quality level, the

Figure 7.1

Comparison of Parent and Observer Quality Scores for Infant/Toddler Classrooms



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[21] For both groups, significant differences were found [infant/toddler t (950)=41.84 p<.0001, effect size=2.23]

figures show how parents with children in these groups rated the quality of those same classrooms. For example, in Figure 7.1, 34% of parents with children in infant/ toddler rooms had children in rooms that were rated poor (1-3) by observers. Of these parents, none assessed the quality of care their children were receiving as poor (1-3), 4% rated it as being mediocre (3-5) (12% of this group of parents), and 30% rated it as developmentally appropriate (5-7) (88% of this group of parents). In other words even in the poorest quality classrooms the vast majority of parents rated their child's care as high quality.

There is no indication that parents consistently gave lower scores to programs given lower quality scores by trained observers. Parent scores were in accord with observer scores primarily when parents had children who were in high-quality programs. When children were in mediocre- to poor- scoring programs, parents continued to assign high scores to those classrooms also.

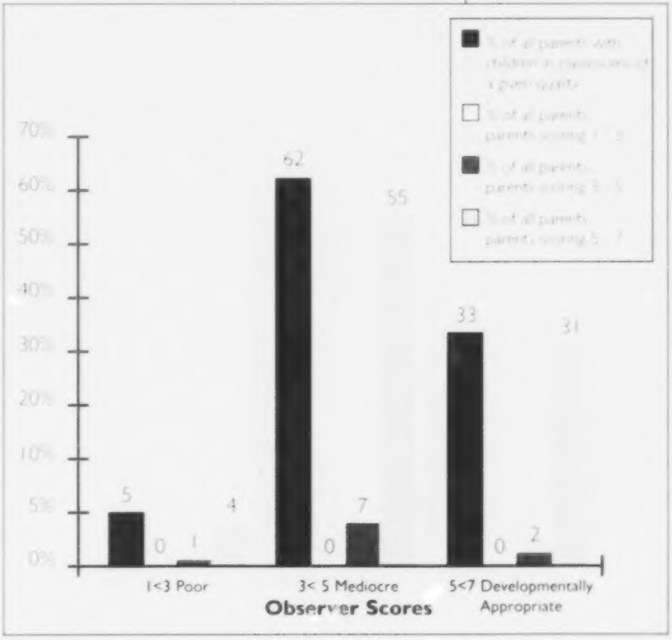
We also examined the possibility that parents gave evaluations similar to trained observers, but used a more restricted scale in their assessments, for instance the upper portion (5-7) of the seven point scale. This possibility was examined in several ways with little evidence to support it. For example when a correlational analysis was used to examine the relationship between mean parent score and observer score in each classroom, only modest correlation coefficients were found for both infant/toddler scores (r=.21, p =.0049) and preschool scores (r=.29, p=.0001).

Since parents are not present to see what happens throughout their child's day, they may be hindered from accurately assessing the quality of services the child receives. To test for this, groups of more and less easily monitored ITERS and ECERS items were created. The more easily monitored group included aspects of care that parents were likely to know about through short visits to the program, such as how children were greeted and how departure was handled or how the room was arranged. The less easily monitored group included aspects of care that parents were less likely to observe regularly, such as how music or block play were handled. The differences between quality scores given by parents and observers were higher for aspects of care that are difficult for parents to observe. This points to an inherent information problem which would be difficult to overcome just through parent education.

One might assume that parents' higher valuation of an aspect of care would increase the likelihood that they would assess that aspect more accurately. We found the opposite. As parents value a dimension of care more highly, the difference between their quality rating and the observer's rating for that dimension actually increased! For example, when parents of infants/toddlers assessed the quality of aspects of care related to health, which they valued most highly, their scores differed from the observer scores more than when they were assessing an aspect of care they valued less, such as the adequacy of adult meeting spaces. This role of parental values in reducing parents' ability to monitor child care also points to market

Figure 7.2

Comparison of Parent and Observer Quality Scores for Preschool Classrooms



The discrepancy between what parents value for their children in child care and what they actually purchase creates imperfections in the child care market place since they may not be buying what they think they are buying.

imperfections by undermining their function as careful consumers.

The discrepancy between what parents value for their children in child care and what they actually purchase creates imperfections in the child care market place since they may not be buying what they think they are buying. The inability of parents to recognize good-quality care reduces the market demand for high-quality care. This implies that they will not pay significantly higher fees for higher quality centers. In fact, regression analyses of fees on quality, state, and state-quality interactions indicated that there was no difference in fees for the kindergarten and school-age group in any state. In Colorado, North Carolina, and Connecticut, there was no significant relation between center quality and fee levels for any age group. California centers were the only ones for which there existed a positive relationship between quality and fees for infant/toddler and preschool children. Given that the production of quality is costly, the results indicate that there is no incentive for centers to produce higher levels of quality, and there may be a real disincentive to do so. An interesting positive exception is California.

The findings do suggest that centers are responding to characteristics of services parents do monitor such as the work-related demands of parents. Centers in both sectors, but more so in the for-profit sector, offer expanded hours to accommodate the needs of working parents. Centers in this sample are open an average of 10 to 12 hours per day. For-profit centers across all states were responsive to the changing demands of families by providing a range of programs such as part-time care, summer camp, and before-and after-school programs. While parents are demanding centers responsiveness to their work-related needs, and while they value good-quality services, they do not seem to be demanding quality for their children.

It is important to note that parents are not the only purchasers of care who do not demand quality services. To the extent that government agencies involved in purchasing care for low-income children impose low payments for services through funding caps and insufficient reimbursement rates, they too contribute to lowering the demand for good-quality child care. This tendency is particularly problematic in poorer areas since the funding caps are usually tied to market rates. In relatively low income communities, most parents are simply not able to afford higher quality care. Thus, the market rate is low and government payments are very low, contributing to the low quality of care in these communities. Such a pattern may contribute to the overall lower cost and quality of care, especially in North Carolina.

Chapter 8
Summary and Recommendations

Results of this study have important policy implications. In this chapter we propose one major policy recommendation and a set of action steps to promote its achievement. As a prelude to this discussion, we briefly summarize both the findings and our interpretations which led to this recommendation.

SUMMARY AND INTERPRETATION

Across all levels of maternal education and child gender and ethnicity, children's cognitive and socio-emotional development are positively related to the quality of their child care experience. Children in higher quality preschool classrooms display greater receptive language ability and pre-math skills, view their child care and themselves more positively, have warmer relationships with their teachers, and have more advanced social skills than those in lower quality classrooms. All of these factors are important to a child's capacity to enter school ready to learn.

Despite the importance of good-quality child care, only one in seven centers provided a level of child care quality that promotes healthy development and learning. These results confirm findings from previous studies, but indicate that care for infants and toddlers may be of even lower quality than previously thought.

Good-quality care does exist and the early childhood profession knows how to provide it. Together, high staff-to-child ratios, more highly educated and specially trained staff, directors with more experience, and staff stability do much to create good-quality services. The field also clearly understands the correlates of low-quality care. Lower quality centers pay lower wages. Wages of women working in child care centers are low, even compared to wages of other women, but foregone wages are lower in centers providing higher quality care.

Center child care—even mediocre-quality care—is costly to provide, and costly for parents to purchase, even with sizeable donations, foregone earnings, tax credits, and cash contributions from public and philanthropic sources that account for half of the full cost of care. Larger centers, or centers that maintain full capacity, can reduce costs through economies of scale and use those savings to increase quality.

It costs more to provide better quality care. However, given the availability of staff who will work for the low wages offered by ECE centers, the cost of providing care at higher quality centers was only about 10% higher, on average, than the cost at centers providing average quality. Our cost and quality results indicate that there are qualities, not easily measured and not captured in our analysis, that contribute to quality in the good centers, such as, for instance, commitment to quality by the director and staff, and special traits of staff which promote good-quality services. Apparently, these intangibles and complex interactions among variables account for the ability of some centers to provide higher quality without incurring substantially higher costs.

Nevertheless, money matters. In general, better quality centers have access to more donations and financial resources. Centers operated by public agencies, worksite centers, and centers that conform to higher standards in order to receive public funding have higher quality; these centers seem to have sizeable donations or cash contributions, which they use to raise quality.

The standards to which a center adheres also affect quality of services.

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An important finding in this study is that it is not profit status which distinguishes between quality of services, but the extent to which centers receive significant sources of revenue other than parent fees.

Weak licensing standards permit some centers to provide lower quality services. Accredited centers have higher quality. Centers that conform to higher standards in order to receive public funding have higher quality.

Sector differences—between for-profit and nonprofit centers—in process quality are not significant except in the state with low licensing standards. In this state the low standards make it possible for some centers, particularly church-affiliated and for-profit centers, to operate with low staffing ratios and less qualified staff to produce poor-quality care. An important finding in this study is that it is not profit status which distinguishes between quality of services, but the extent to which centers receive significant sources of revenue other than parent fees. For-profit and church-affiliated centers have both lower structural and process quality than independent nonprofit and publicly operated centers. They have in common their dependence on parent fees as their major source of revenue.

Sector differences may matter in creating market competitive characteristics that reduce center quality. Child care center markets appear to be highly competitive with low profit margins in the for-profit sector, and low surpluses in the nonprofit sector. Also, hourly fees are not significantly different between the two sectors, indicating that for-profit and nonprofit centers do compete for clientele. However, for-profit and nonprofit centers have different cost structures, because of the greater reliance on donations by nonprofits and the higher expenditures on facilities by for-profits. This leads to reduced expenditures per child hour on labor by for-profits, which could reduce quality of services. Larger for-profits, however, seem to take advantage of economies of scale which can permit them to produce good-quality care at a lower cost per child hour compared to smaller nonprofit centers.

Finally, we found evidence of market imperfections in center child care markets. Efficient markets require that buyers have full information. Parents in this study, while valuing the same aspects of quality considered important by the ECE profession, dramatically overestimated the quality of care their children were receiving. Furthermore, fee differences between developmentally appropriate care and mediocre care, were not great enough to offset cost differences. Since parents cannot distinguish better service and since centers are not financially rewarded for doing so, there may be a disincentive for centers to improve the quality of care they provide. Until parents and other purchasers of care can easily distinguish good from mediocre- and poor-quality centers, and demand higher quality, centers cannot increase their fees to cover the increased costs of providing better care.

In sum, about 87% of the centers studied provide mediocre- or poor-quality services. Good-quality centers have the resources to provide quality, but they do not spend a lot more per child hour than centers providing mediocre quality. Commitment to providing good-quality care, backed up by the ability to create a nurturing learning environment appears to be crucial in the provision of good-quality care. At this stage of development of the child care market, where altruistic values motivate directors and staff at some centers, higher quality is not necessarily associated with higher cost. If this is true, it is suggestive of two problems related to creating good-quality center care. First, as the labor market tightens and ECE staff become more concerned about being paid what they are worth, the ECE center market will face considerably higher costs. Second, achieving good-quality care universally may be somewhat illusive if good quality is dependent on organizational structure of centers and enlightened leadership.

RECOMMENDATIONS FOR ACTION

Throughout this document, data reaffirm the existence of a silent crisis, largely unacknowledged by American families or the American public. The crisis stems from our inattention to the quality of child care—an inattention that carries with it profound costs in human and economic terms. The majority of American children who are in child care centers spend many hours in mediocre quality settings that are detrimental to their development. Meanwhile, their parents are forced to settle for the consolation that, at least, they have found some care for their children that protects them from physical harm. Workers in these settings, although dedicated, flee the field for wages which reflect their worth. And the American public, although adoring young children and rhetorically adorning them as the "future of the nation", blindly engages in self-deception about child care quality so great that it could be deemed societal child neglect.

Unlike many studies that have come before, this study clearly quantifies the dimensions of the crises in economic terms. We now know that quality costs, that quality makes a difference, and that U. S. child care is being subsidized in ways that threaten quality. This report acknowledges the real costs of child care, reveals the hidden costs (in donations and foregone earnings), and in so doing mandates that the nation reexamine personal and social investments in this industry.

In this nation, there is a professed commitment that by the year 2000, children will enter school ready to learn. Yet despite this intent, the reality of child care in the United States today makes it unlikely that we will reach that goal. Unless poor-quality child care is curtailed, the development and well-being of large numbers of our nation's children may be jeopardized. To that end, we make only one recommendation, a recommendation that we deem a social imperative. It is followed by a series of near-term strategies that are necessary correlates of our major recommendation. These strategic recommendations are not presented in order of importance or order of attention needed.

Overall Study Recommendation

The nation must commit to improving the quality of child care services and to ensuring that all children and their families have access to good programs. That is, good-quality child care must become a merit good in the United States.

Earlier in this document, we defined merit good and noted that historically some people in our society have considered good-quality child care a merit good. By this we mean that good-quality child care (like other merit goods) needs to be supplied to individuals and families in larger quantities than would be supported by private demand. Inherent in the definition of a merit good is an understanding that altruistic citizens—and, in this case the public at large—value the service enough to make it available to families who will not, or who cannot, purchase it on their own.

We argue that good-quality child care must become generally recognized as a merit good. However, there are difficulties with characterizing it as a merit good. It does not now represent reality; our society does not appear to value quality in child care. Further, it could be construed to infer that as a merit good, all child care in the United States should become the purview of the government. Discussing these caveats is essential to clarifying both our construct of merit good and the recommendation we make.

First, while many may ideally wish to regard good-quality child care as a merit good, the hard reality is that child care in the United States is more akin to the service of last resort, at both individual familial and institutional policy levels. For families, child care is the last resort because it cannot be chosen for the benefits that will accrue to children as a result of their participation (though clearly parents hope this will be the case). It is chosen because it is a secondary service that enables parents to meet their primary mission of gainful employment. Similarly, at the institutional policy level,

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public child care has historically been an enabling service—for instance, it enabled Rosie to rivet during World War II. Child care, then, is not seen as a merit or altruistic good, delivered for its inherent value or contributions. It is not and never has been an altruistic national goal; it is and always has been a means to supporting workers (or future workers) through greater social or personal crises.

Illustrative of this point is current child care related public policy, much of which seems designed to produce mediocrity. Federal tax credits are limited to the first $200 per month of care, a figure that would, at most, cover minimal quality. Credits for costs of providing higher quality do not exist. Federal rules for reimbursement of child care cost based on 75% of market prices of child care reflect a concern for cost, not quality. Lack of differential reimbursement incentives for developmentally appropriate quality, or even monitoring thereof, implies that quality does not matter. Wage levels that push workers out of the industry in search of higher incomes suggest little regard for the skills that produce higher quality care.

It is not sufficient to have any child care as a merit good; it must be good-quality child care. We say this because the level of quality matters for young children. To advocate for any child care as a merit good would belie the very intent of merit good. A merit good must, indeed, be of merit; anything less than good-quality developmentally appropriate care—because of its deleterious effect—cannot be even casually deemed of merit. Consequently, we call for good-quality child care as a merit good.

Second, while discussions of merit goods may become confounded with public or collective goods, we distinguish between these terms, suggesting that good-quality child care be recognized primarily as a merit, not a collective good. We do so because suggesting that good-quality child care be recognized as a collective or public good could be interpreted to infer that we are suggesting full public support for this public good. We are not. We suggest that good-quality child care be regarded as a merit good that exists in, is financed from, and retains multiple supports.

Recommending that good-quality child care be regarded and supported as a merit good means that child care must be recognized not as a means but as a legitimate end, in and of itself. In this schema the nation provides good-quality child care because it is good for children. In contrast to current thinking which justifies child care as a service to parents, thereby tacitly sanctioning mediocrity for children, the concept of a merit good places children and their developmental needs front and center, with no equivocation. A dramatic departure from what exists, this recommendation is fundamental to reforming the raison d'etre for American child care. By conceptualizing quality child care as a merit good, we shift the debate from providing mediocre services that suffice while parents work to providing higher-quality services that enrich our children and thereby our nation.

We recognize that child care reform will not take place immediately; it will not take place without concerted effort across the sectors; and it will not take place in a tidy, linear fashion. As reform to make good-quality child care a merit good takes place, we note the following assumptions:

1. Child care will remain a mixed sector industry; that is, centers will continue to operate in the for-profit, nonprofit, and government sectors.
2. Child care participation will remain voluntary; that is, parents will have the right and responsibility to choose whether or not they use child care.
3. Parents' right to choose child care will be preserved; that is, parents will have the right and responsibility to select the type of child care they wish.
4. As a merit good, the financing of good-quality child care will be shared by responsible parties; that is, to the extent feasible, families, responsible employers, philanthropic organizations,

and the government will contribute to the provision of child care.

Framed by this definition of a merit good, by this rationale, and by these assumptions, we turn our attention to action steps that will lead the American public to recognize and support quality child care as a merit good.

Action Step 1

Launch consumer and education efforts in the public and private sectors to help parents identify good-quality child care programs and to inform the American public of the liability of poor-quality programs.

- Give parents clear information regarding the observable ingredients of good-quality child care.
- Give parents and others information that clearly identifies good-quality programs.
- Initiate a long-term public media campaign, analogous to the one addressing the impact of smoking on health, to raise public awareness of the nature and importance of good-quality child care.
- In collaboration with other private and public agencies, initiate a federally supported program of research to increase understanding of the child care market and its effects on children and to provide an ongoing database on the status of child care in the United States.

Action Step 2

Implement higher standards for child care at the state level as a major step toward eliminating poor-quality child care.

- Create higher standards at the state level and improve monitoring of child care as part of consumer protection. Standards must do more than protect the basic health and safety of children—they must also take into account children's developmental needs, with special attention to the needs of infants and toddlers.
- Eliminate all exemptions from state licensing standards.
- Encourage centers to seek and maintain voluntary professional center accreditation based on high standards.
- Give state and federal financial incentives for centers to provide care that meets higher standards; eliminate federal regulations that restrict the ability of states to pay higher prices for higher quality care.

Action Step 3

Assure adequate financing and support of child care.

- Increase investment in child care by federal, state, and local government as well as by the private sector to help families pay the cost of care.
- Tie federal and state child care funding to standards that demonstrably produce high-quality care, especially for infant/toddler programs.
- Provide financial incentives that enable centers to hire experienced administrators and skilled staff and to learn how to keep them.
- Tailor employee benefits to provide significant help to employees with children as part of the private sector's support of child care.

Action Step 4

Increase investments in child care staff to assure a skilled and stable workforce.

- Invest more federal, state, and local government funds and private sector funds in the education and training of child care staff and administrators.
- Provide all child care staff compensation appropriate to their training, experience, and responsibility.

By concepualizing quality child care as a merit good we shift the debate from providing mediocre services that suffice while parents work to providing higher-quality services that enrich our children and thereby our nation.

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Glossary

AFDC JOBS Programs - were mandated in The Family Support Act of 1988 welfare reform legislation. They are state-level initiatives to move mothers receiving Aid for Families with Dependent Children (AFDC) into paid work through provision of training programs, special counseling, and child care benefits.

Agency problem - a type of market imperfection which may arise when a second party, the agent, acts on behalf of another person, the principal, in market transactions or other forms of economic exchange. An agency problem arises when the agent does not act in the best interests of his/her principal. In such situations the market exchange, or purchase, does not reflect what would be in the best interests of the principal. In child care there are two kinds of agency and each can involve an agency problem. First, when parents purchase services for their children, they are their children's agent, acting on their behalf. Second, in purchasing child care from a center, the parents enter into a contractual arrangement with the center which then becomes the agent for the parents in providing services for their children. In either case, it is possible that the agent will not properly represent the principal (that is, the child or the parents), and this can create market imperfections. To overcome agency problems, it is necessary to establish incentives which induce the agent to act in the principal's best interest. Ordinarily, agency problems refer to explicit contractual relationships; we are extending the concept to also include the implicit contract between parent and child.

Auspice - is the term we use to designate the subsectors within the nonprofit and for-profit sectors. For instance, independent nonprofit, church-affiliated nonprofit, and publicly operated centers are the three auspice categories included in the nonprofit sector.

Collective goods - are goods or services the consumption of which benefits individuals other than the direct consumers. Immunization shots are a good example. Immunizing poor people from contagious diseases benefits the poor individual but also the society as a whole in cutting down on the probability of an epidemic. Sometimes the term public good is used synonymously with collective good. We try to avoid using public good because in economics it is used to describe a specific type of collective good.

Commodification - is part of the process of economic development in a market economy in which goods and services that were traditionally produced, for instance, at home or on a subsistence farm for family consumption begin to be produced for exchange and profit. It is a process by which home and other nonmarket production is replaced by market provision. Child rearing is one of the many kinds of home provision for one's own family that in this century has been increasingly supplanted by market provision.

Demand conditions - are factors which influence how much of a good or service a person would be willing to purchase at a given price. In child care, demand conditions influence parents' decisions about how much and what quality of service to purchase at a given fee. Demand conditions include family income and purchasing power, location convenience of the center, parents' knowledge of the options for care and of the characteristics of good quality services provided, the reliability and trustworthiness of providers, the costs involved in gaining knowledge about the existence and quality of child care services, and parents' values and preferences.

Developmental outcomes - refers to children's developmental levels based on measures of the cognitive and socio-emotional functioning of children, outcomes which over the longer term relate to children's success in school.

Donations - refer to in-kind donations of goods and services (but not cash) to child care centers by individuals and agencies. These include donations or discounts on facilities, utilities, facilities maintenance, food, materials, or equipment. They also include services of volunteers.

Economies of scale - exist in the production of a good or service if the average total cost per item produced is lower for larger businesses producing more of the item per hour. For example, a medical practice involving several internists can provide general patient care at lower cost per visit than can a single physician with his own office. In the case of child care, economies of scale would exist if larger centers designed to serve more children provided similar quality care at a lower cost per child hour as compared to smaller centers.

Economies of scope - exist if the cost per unit of output is lower because a business produces several related products or services at once. For example, a medical clinic might offer services in internal medicine, pediatrics, and sports medicine. There would be economies of scope if the cost per treatment are lower when the services are combined in one clinic than if each specialty is organized separately. In the case of center child care, there would be economies of scope if provision of care for children of several age-groups lowers the overall cost per child hour. There might also be economies of scope if other related programs are integrated into the services provided by the center.

Expended costs - are cash costs or expenses a center incurs to operate the center programs. It excludes the value of in-kind donations of space or other resources used to provide services.

External benefits and costs - to market transactions occur whenever people other than the direct purchaser of a good or service benefit from someone else buying the good or service. In such cases, those that benefit and do not pay for the item are getting a "free ride" because they are not paying for the service, and this may mean that not enough of the service is demanded. For instance, farmers provide an external benefit in creating a beautiful country-side which people from the city can drive out to see. This is an external benefit, because the people from the city do not pay for their enjoyment. Child care may provide external benefits to taxpayers if children who receive these services do better in school and require fewer publicly provided services as they grow up. External costs occur when a production process creates costs which are not included in the price of the product produced, for instance, the water pollution which is created by farmers using insecticides and herbicides.

Foregone wages - is the difference between the wage a person could earn—given her/his years of education, age, marital status, gender, racial/ethnic origin—and what the person actually earns. Ideally, other factors affecting wages would also be included, for instance, job experience. These are foregone wages because the person could have earned this extra amount in another job for which he/she is qualified. For example, an artist with a master's degree representing sixteen years of education may choose to pursue her art while working as a garage attendant, foregoing a much higher income as a graphic designer for an advertising agency.

Full cost - refers to the amount it would take to operate centers if all resources were purchased at market prices. In this study, the full cost of care equals expended costs plus donations plus foregone wages.

Full-time equivalent (FTE) - refers to the number of full-time equivalent children enrolled in a center. That is, if a center has a full-time program in which children are present eight to ten hours a day, to measure enrollment, each child is counted as one full-time equivalent. If this center also has a morning program for preschool children, each child in the morning program would be considered 1/2 a full-time equivalent in measuring total center enrollment. If the center has a before- and after-school program, a child which is enrolled both for the before-school and after-school portion of the program would be considered one full-time equivalent school-aged child for purposes of measuring center enrollment.

Human Capital - the acquired skills, education, experience, and other characteristics of a person such as good health that enhance the person's value in the labor market. These are considered "capital," because their acquisition requires an investment by the person, similar to a business investing in a new piece of machinery.

Intermediate goods - are distinguished from final goods and services. A final good or service is something which is produced and sold to the final consumer, such as a TV set or child care services. An intermediate good is a product which is produced to be used to produce some final good or service, for instance, lumber to be used in housing, or toys purchased by a child care center. (Toys purchased by families, on the other hand, would be considered a final good.)

Market imperfections - is often used synonymously with market failures. A market imperfection exists if, for some reason, market competition does not allocate resources in accordance with the demand for the product at a price which reflects the minimum cost of production. Commonly cited causes are monopoly pricing which restricts supply and raises prices, external benefits or costs (such as pollution from manufacture), agency problems, imperfect consumer knowledge, and merit or collective goods. When there are market imperfections, market competition fails to supply optimal amounts of goods and services (at low cost). Market imperfections or failures seem to exist in child care markets. For instance, imperfect consumer knowledge about the importance of good quality care may reduce private (parent) demand and public demand (including government and philanthropies) for good-quality care.

Market failure - See Market imperfections.

Merit goods - are goods or services that society as a whole or a large number of altruistic members are willing to pay for because they think everyone who needs it should have access to the good or service regardless of their ability to pay or their personal tastes. Merit goods reflect the values of the society; thus, what is considered to be a merit good changes over time. Some examples of merit goods are health care for pregnant women and young babies, police protection, and potable water.

Mixed industries - are industries that include firms organized as profit making businesses, nonprofit agencies, and sometimes public agencies. The child care center market is a mixed industry because services are supplied by establishments with different structures of ownership.

Monopolistic competition - is the name given to describe highly competitive markets with large numbers of buyers and sellers where the suppliers provide a differentiated product or service. For instance, the restaurant business is monopolistically competitive, because there are a lot of restaurants, each located in a different place, each providing a slightly different menu, and each with different decor and different staff. Center child care markets are monopolistically competitive because centers compete keenly for customers in their local market area, and provide services which are different in many ways, one from another. Centers are relatively easy to open, and while somewhat expensive to start up, these costs are not high compared to industries dominated by big business. Furthermore, family child care providers compete as an alternate and often less expensive substitute for center child care.

Process quality - refers to the general environment and social interactions in a child care classroom. It represents the quality of services that are directly received by children and their families which cannot be regulated because of their qualitative nature. In this report we use the process quality index to describe overall quality of a center.

Public goods - are goods that meet two conditions: (1) additional people can receive the benefit of the good at no additional cost to the producer; (2) additional people cannot be prevented from consuming the good, even if they refuse to pay for it. Traditional examples are national defense and radio signals. The term is also used sometimes to designate the more inclusive category referred to as collective goods.

Resource and referral agencies - are local organizations whose purpose is to direct parents to available child care centers or family child care homes. They may also coordinate training opportunities for providers and otherwise help providers to develop new centers or homes. Finally, they may also work with local businesses and communities to increase awareness of parent needs for child care and other work-related services.

Revenue - refers to the total amount of income received by a center, including fees paid by parents, publicly reimbursed fees, USDA food grants, other public funds, sponsor and other private contributions, and other revenue.

Sector - is used in this study to distinguish between nonprofit and for-profit centers.

Short-run decreasing average costs - exist if average variable cost per child hour decreases with an increase in total child hours provided by the center. This is called short-run because the size of the center (its legal capacity) is fixed. The long-run equivalent is economies of scale.

Structural quality - measures include staff-to-child ratio, group size, staff education and experience, square feet of facility per child, and other measures of the quality of the facility that houses the center. They are aspects of classroom structure that can be regulated to improve the quality of services to children.

Subsidies - are defined in this study as anything that either reduces the cost of providing care to children such as in-kind donations or foregone earnings, or that allows children whose parents could not otherwise afford care to attend a particular center.

Systems - are entities which perform a set of functions to achieve given goals. They are composed of a set of interrelated parts which help perform the system function. An automobile is a system of interrelated parts, as is any mechanical device. Organizations can also be thought of as systems. In particular, a for-profit manufacturing firm is a system designed to produce some commodity for sale and for profit. Often, systems are designed to generate information which can be used to monitor and improve their functioning. For instance, a thermostat is a system which regulates the heat in a house by measuring the temperature and automatically turning the furnace on an off to keep the temperature within a particular range. In this study we depict child care centers as systems designed to provide services for families and their children based on certain goals that have been identified by the owners or board of directors. Center operations provide information on operations which can then be used to revise procedures to improve center performance. For instance, the center keeps financial accounts to check on its success in staying within its budget, and, in the case of for-profit centers, earning profit. Centers also keep track of children's attendance and sickness, and a myriad of other aspects of the program used for evaluation and improvement.

Total variable costs - are the costs that change with the volume of services provided in the short-run when the amount of physical space available is fixed. For example, a center can increase the number of children served by offering more diversified services at different times of the day. This can increase the number of hours of service offered in the same physical location. Thus, total variable cost excludes rent or mortgage payments which are fixed costs in the day-to-day operations of the centers. In this study, total variable cost includes the value of donations which represent resources used to provide services as well as an imputed value of the services of owner-operators who do not take a salary.

Transaction costs - are the monetary and nonmonetary costs of purchasing a good or service in addition to the price of the item itself. For instance, in shopping for clothes, transaction costs are the costs of travelling to the stores, shopping around, and, possibly, returning to pick up alterations. In child care purchases, transaction costs include time spent searching for a center, visiting centers, and monitoring the center after choosing it.

Trust goods - are goods or services the quality of which are very important to the purchasers but difficult for the purchaser to assess accurately. Services provided by nursing homes and child care centers are trust goods. For buyers who wish to be assured that they are purchasing good quality, they will often pay more for a brand or service which they have reason to believe is of better quality. This is the reason that accreditation of child care centers is a useful device for both buyers and sellers. Buyers can know that accreditation is related to good-quality services.

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COST, QUALITY AND CHILD OUTCOMES IN CHILD CARE CENTERS

EXECUTIVE SUMMARY

APRIL, 1995

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We would like to give our thanks to the directors, administrators, teachers and parents who graciously gave their time to this study; to the teachers who let us into their classrooms; to the parents who agreed to have their children participate; and, of course, to the children themselves. Without all of their help this study would not have been possible.

The opinions in this report are those of the Cost, Quality and Outcomes Team and do not necessarily reflect the views of any of the funding foundations, advisors, or consultants.

Cost, Quality, and Child Outcomes in Child Care Centers

Executive Summary

April, 1995

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Cost, Quality, and Child Outcomes in Child Care Centers

Executive Summary

Conducted at a time when increasing numbers of the nation's young children are in child care and when the American public is duly concerned about the readiness of young children for school, the Cost, Quality, and Child Outcomes Study provides the first comprehensive econometric and psychometric analysis of child care and children's outcomes. Uniquely designed to examine the relationships among the costs of child care, the nature of children's child care experiences, and their effects on children, this study provides fresh provocative information for practitioners, policymakers, and the public.

In brief the study found that while child care varies widely within and between states and sectors of this industry, most child care is mediocre in quality, sufficiently poor to interfere with children's emotional and intellectual development. Market forces constrain the cost of child care and at the same time depress the quality of care provided to children.

Results indicate similar fees, low profit margins, and minimization of costs—all characteristics associated with strong price competition. Good-quality care costs somewhat more to produce than poor-quality care, but generally higher costs are not obviously reflected in parent fees, which are relatively similar in centers of different quality. Consumers thus show little differential effective demand for higher quality, in part because they have difficulty observing the quality of care the children actually receive. This means that there are few economic incentives for centers to improve quality.

The research team collected cost and quality data during the spring of 1993 through visits to 50 non-profit and 50 for-profit randomly chosen centers in each of four states: California, Colorado, Connecticut, and North Carolina. Trained data collectors conducted interviews and distributed questionnaires to center directors, teachers, and parents and observed two randomly chosen classrooms in each center. That summer, the team collected data on 826 children from preschool classrooms visited earlier, which allowed an examination of the concurrent developmental outcomes related to their child care experience.

This report summarizes findings in four major areas: 1) quality, 2) costs, revenue, and support, 3) sector comparisons, and 4) the child care economic envionment.[1] It discusses implications of these findings and makes recommendations for change. Study methodology is summarized in Appendix 1.

Major Findings

QUALITY:

Based on criteria established by the early care and education (ECE) professional communities, we define "quality" child care as that which is most likely to support children's positive development. To ascertain classroom quality, trained observers used instruments that permitted evaluation of the quality of the total child care environment as well as more specific aspects of the relationship between teacher and child (see Appendix 1 for detail). An overall index of center quality was constructed, from 1 to 7, interpreted as follows:

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[1] Unless otherwise stated, all findings reported here are statistically significant at least at the 5% level

1 - Inadequate: Children's needs for health and safety not met; no warmth or support from adults observed, no learning encouraged.

3 - Minimal: Children's basic health and safety needs met; a little warmth and support provided by adults; few learning experiences.

5 - Good: Health and safety needs fully met; warmth and support for all children; learning in many ways through interesting, fun activities.

7 - Excellent: Everything in "good," plus children encouraged to become independent; teacher plans for children's individual learning needs; adults have close, personal relationships with each child.

The range of quality between these scores is also important. In particular, we call services that are rated below minimal (less than 3) "poor" or "less than minimal"; those that are between minimal and good (3 to less than 5) "mediocre"; and those that are between good and excellent (5 and over) "developmentally appropriate."

FINDING 1: Child care at most centers in the United States is poor to mediocre, with almost half of the infants and toddlers in rooms having less than minimal quality.

The level of quality at most U.S. child care centers, especially in infant/toddler rooms, does not meet children's needs for health, safety, warm relationships, and learning. While there is a great deal of variation in the sample, the mean score for all centers in the study was 4.0, a full point below the good-quality level (5). Figures 1 through 3 show the distribution of quality scores. Only one in seven centers (14%) received a rating of developmentally appropriate (5 or above), and one in eight (12%) were less than minimal (less than 3).

Child care for infants or toddlers is of particular concern. Of the 225 infant or toddler room observations, only 1 in 12 (8%) met the good-quality level, while 2 in 5 (40%) rated less than minimal. Babies in poor-quality rooms are vulnerable to more illness because basic sanitary conditions are not met for diapering and feeding; are endangered because of safety problems that exist in the room; miss warm, supportive relationships with adults; and lose out on learning because they lack the books and toys required for physical and intellectual growth.

FIGURE 1:
Process Quality in Child Care Centers
(N=398)

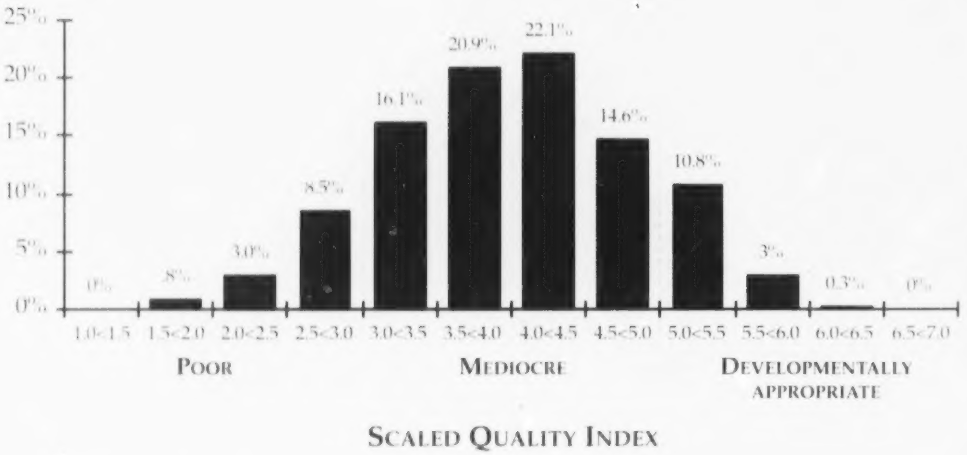


FIGURE 2:
Process Quality in Child Care Centers
Infant/Toddler Classrooms
(N=225)

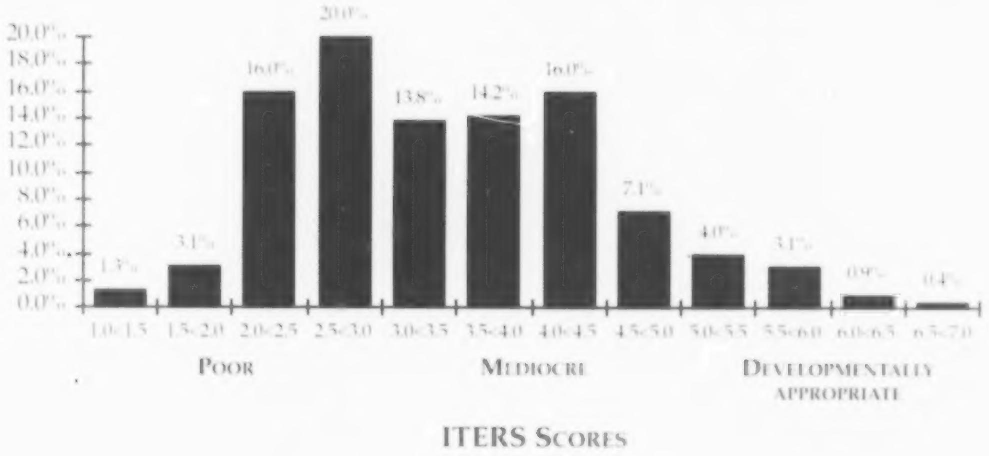
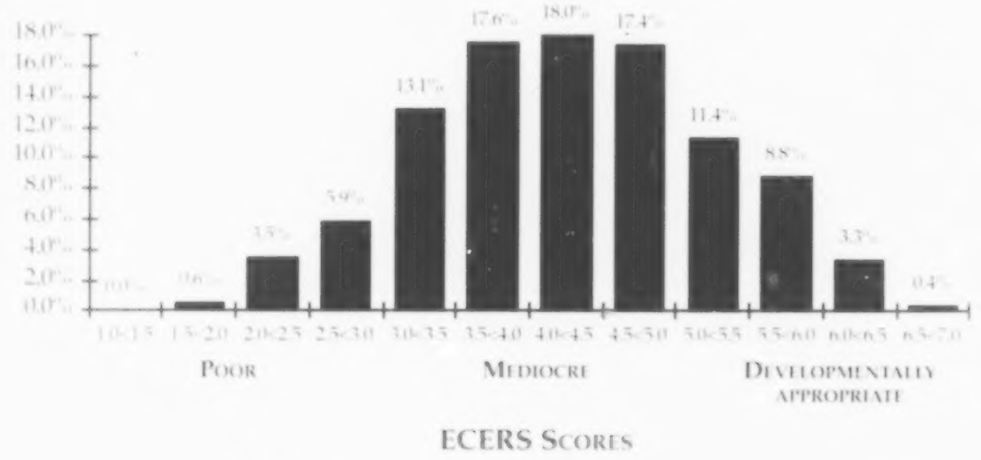


FIGURE 3:
Process Quality in Child Care Centers
Preschool Classrooms
(N=511)



FINDING 2: Across all levels of maternal education and child gender and ethnicity, children's cognitive and social development are positively related to the quality of their child care experience.

Children in higher quality preschool classrooms display greater receptive language ability and pre-mathematics skills, and have more advanced social skills than those in lower quality classrooms. Children in higher quality centers have more positive self-perceptions and attitudes toward their child care, and their teachers are more likely to have warm, open relationships with them. All of these factors are considered important to a child's capacity to enter school ready to learn. Further, these relations were obtained in analyses that controlled for child and parent characteristics known to be related to both child care selection and developmental outcomes, including maternal education and child gender and ethnicity.

While many previous research projects have studied the impact of child care on the development of at-risk children, this study focuses on the broad range of children in center care. For these children, developmental outcomes on a wide variety of measures improve with the quality of the center across all levels of maternal education and child characteristics. In some instances, however, quality had even more impact on children typically at risk (specifically on receptive language ability of minority children and on the self-perceptions of children of less-educated mothers).

FINDING 3: The quality of child care is primarily related to higher staff-to-child ratios, staff education, and administrators' prior experience. In addition, certain characteristics distinguish poor, mediocre, and good-quality centers, the most important of which are teacher wages, education, and specialized training.

This study affirms how important the ratio of adults to children is to quality of services. In the statistical analysis to predict the determinants of quality, the staff-to-child ratio is the most significant determinant of quality, even when controlling for other factors affecting quality. Center quality also increases as the percentage of center staff with a high level of education increases. An increase in a center administrator's prior experience generates higher quality, all else being constant. Finally, there is some evidence that staff tenure at the center also increases quality.

A different analysis identified classroom and center characteristics that distinguished among centers of poor, mediocre, and good quality. This analysis was particularly successful in identifying poor-quality centers, and only moderately helpful in discriminating between mediocre care and good-quality care. The most important discriminators were average teacher wage rates, and teaching staff education and specialized training.

FINDING 4: States with more demanding licensing standards have fewer poor-quality centers. Centers that comply with additional standards beyond those required for licensing provide higher quality services.

More poor-quality centers were found in North Carolina than in the other three states. Of the four states included in the study, North Carolina is the state with the least stringent child care standards. For example, at the time of data collection, North Carolina allowed 1 adult to every 6 infants or 15 three-year-olds, while the other states required 1 adult to every 4 or 5 infants or 10 or 12 three-year-olds. Similarly, North Carolina required far less early childhood education of its center staff than did the other three states.

In addition, centers that meet higher standards than required of all centers in their state in order to receive public funding pay higher wages, provide better benefits and working conditions and have higher overall quality. Finally, accredited centers, those that voluntarily meet a higher set of standards specified by an outside organization, have higher quality than do nonaccredited centers.

FINDING 5: Three specific types of centers provide higher than average overall quality. The financial characteristic these centers share is that they have access to extra resources that they use to improve quality.

The 28 centers operated by a variety of public agencies (in public schools, state colleges, and universities, or operated by municipal agencies), the 16 worksite centers, and the 30 centers with public funding tied to higher standards (the same group cited in Finding #4) provide higher quality care than other centers. With few exceptions they share the following characteristics: they have higher expended costs and total revenue per child hour, have more donated resources, and are less dependent on parent fees than other centers; they pay higher wages and provide more staff benefits; they have higher staff-to-child ratios; and teachers have more education, more specialized training, and longer tenure in the centers.

The econometric analysis shows that centers operated by public agencies (and nonprofit centers in general) use resources as efficiently as other centers. That is, for a particular level of quality, wage rates, full-time-equivalent (FTE) children, and size of facility, the cost per child hour is the same as at other centers.

These results suggest that quality is higher in centers that have in-kind donations or outside funding that they use to increase quality. While parent fees may represent a major source of revenue (for instance, in the worksite centers and centers operated by state colleges or universities), these centers do not have to depend solely on parent fees to finance the provision of quality services.

COSTS, REVENUE, AND SUPPORT:

Before discussing costs and revenue, several terms must be defined. First, we use the term ***expended costs*** to refer to cash costs that are actually incurred to run centers. Second, we use the term ***donations*** to refer to the goods and services that are donated by individuals and agencies to support child care. Those donations—facilities, volunteer services, or other kinds of goods or services—must be included to report accurately all of the costs of providing care. Third, we use the term ***foregone wages*** to refer to the difference between the wage a staff person could earn in another occupation (based on the person's education, sex, age, race, and marital status) and the person's wage as a child care worker.[2] Fourth, we use the term ***full cost*** to refer to the amount it would take to operate centers if all costs were included. That is, the full cost of care equals expended costs plus donations plus foregone wages. Finally, we use the term ***total revenue*** to refer to the total amount of income received by a center, including fees paid by parents, publicly reimbursed fees, USDA food grants, other public funds, sponsor and other private contributions, and other revenue.

FINDING 6: Center child care, even mediocre-quality care, is costly to provide. Even so, donations and foregone wages are large, accounting for more than one-fourth of the full cost of care.

The average ***expended cost*** (or cash cost) is $95 per week per child, or $2.11 per child hour, to provide mediocre care. (See Figure 4 on the following page for costs by state.) In this labor-intensive industry, labor costs account for 70% of total expended costs. Facilities costs represent 15%, and all other cash expenses make up only 15% of the total. That expended costs are as low as they are is due to the use of primarily female employees (97% were women in this sample) who earn even less in child care than they could in other female-dominated occupations. In this study, the mean foregone wages given up by teachers was $5,238 per year; assistant teachers gave up $3,582 per year.

Our estimate of the mean ***full cost*** of producing center child care services is $2.83 per child hour ($127 per week), or $.72 per child hour more than expended costs. Figure 5 (on the following page) shows that this additional $.72 per hour of costs comes from: 1) workers who contribute 19% of full costs ($.54 per child hour) in the form of foregone wages and benefits, 2) occupancy donations, which average about 5% of full cost ($.14 per child hour), and 3) volunteer services and donated goods, which represent 2% of full costs ($.06 per child hour).[3]

The amounts of foregone wages and in-kind donations vary by state. When foregone wages are adjusted for regional differences in the cost of living, they are smallest in Connecticut, where overall quality is

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[2] Foregone wages represent another kind of cost. Child care is a labor intensive industry dependent on female employees who work for wages below those they could earn, even in other female-dominated occupations, all of which pay less than comparable male occupations. Regardless of the reason that child care employees accept jobs in the field, centers are using labor resources which embody human educational investments and work experience that do not show up in center cash outlays. As the industry expands or improves quality, or if the national labor market tightens, it may be naive to expect more and more women to continue to work for these lower wages.

[3] These do not add up to exactly $.72 because of rounding errors.

FIGURE 4:
Expended Cost per Child Care Hour by State

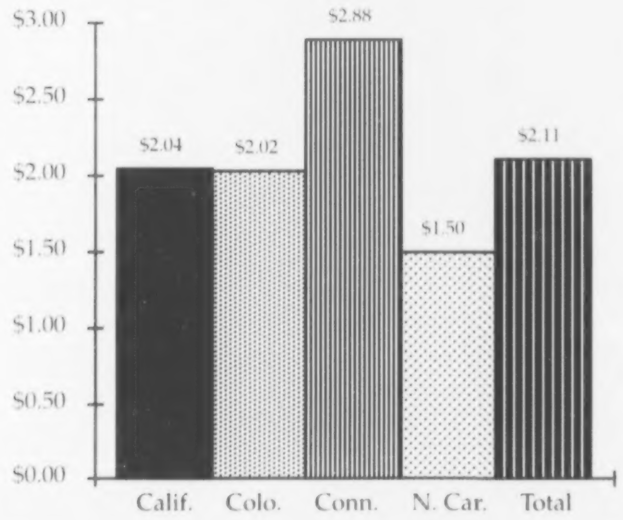
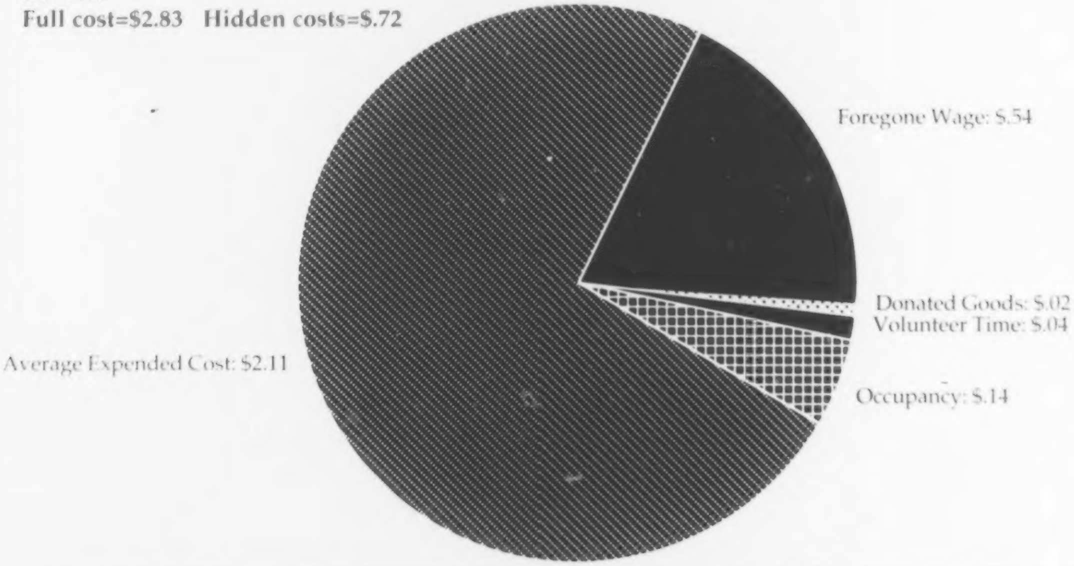


FIGURE 5:
Full Cost of Child Care per Child Hour
(N=398)
Full cost=$2.83 Hidden costs=$.72



higher, and largest in Colorado, where quality is lower than expected (based on licensing standards). This suggests a poitive relationship between quality and the payment of wages that are more competitive with those in other industries using similarly qualified workers.

A comparison of the expended cost of child care with a typical family's income indicates the high cost of producing even mediocre-quality care. The average annual expended cost paid by a center to provide services for one child is $4940 per year. This represents 8% of the 1993 median U.S. family before-tax income of about $60,000 for a dual-earner family when both were employed full time, and 23% of the 1993 median before-tax earnings of just over $21,000 for families headed by a single parent employed full time (*Statistical Abstract of the U.S. 1994*, pages 429 and 474).

FINDING 7: Good-quality services cost more than mediocre quality, but not a lot more.

The cost of providing care is modestly and positively related to the level of quality of services.[4] The additional cost to produce good-quality services compared to mediocre-quality care was about 10%. The cost of increasing quality increases, however, at higher levels of quality.

This 10% estimate is based on cross-sectional data and cannot, therefore, be used to project the quality change from increasing industry-wide expenditures. For a 10% increase in cost to significantly improve quality, the money would have to be spent wisely and not cause any increase in the prices of resources used.

FINDING 8: Center enrollment affects costs.

The effect of enrollment on costs shows up in two ways. First, the larger the number of children served (up to the legal capacity of the center) and/or the longer the hours of service, the lower the cost per child hour for a particular level of quality. That is, using the same facility space, serving more children or serving them more hours brings about a proportionately smaller increase in cost per child hour. Second, larger centers, those serving a larger number of FTE children, also have lower average total expended costs per child hour than centers serving a smaller number of children, even holding quality constant.

FINDING 9: Cash payment from government and philanthropies are sources of center revenue that demonstrate a social commitment to sharing the expense of child care. On average, these cash payments represent 28% of center revenue.

As a society we consider center child care an important service that some children need regardless of their family's income. Economists call such things ***merit goods***, because all who need the service merit having it. Cash philanthropic contributions, public funding of centers, and child care tax credits all help reduce the fees paid by parents and other purchasers of child care as do donations and foregone wages.

For the whole sample, including families whose child care is subsidized, parent payments to centers represent the equivalent of $1.55 per child hour or $70 per week. This represents 71% of center revenue (and 55% of full cost). For families that pay full tuition, tuition for preschool-aged children averages $1.92 per child hour or $86 per week. If the typical family elects to take the federal child care tax credit available to them, this represents another government contribution, reducing parent expense by an estimated average of $.21 per child hour (20% of $200 per month/193 hours per month).

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[4] The cost referred to in Findings 7 and 8 is based on the definition used in the econometric analyses, where, for consistency with economic theory, cost was measured as variable cost (excluding facilities cost and including in-kind donations and the imputed value of administrators' salaries for owner-operated centers).

SECTOR COMPARISONS:

Child care centers operate in a mixed market made up of private nonprofit centers, nonprofit publicly operated centers, and centers owned and operated for profit. The existence of nonprofit centers reflects long-standing public and philanthropic willingness to support provision of child care as a merit good. However, the fact that different kinds of financial structures co-exist and compete in local markets can affect the cost and quality of services.

FINDING 10: There are differences between for-profit and nonprofit sectors. Overall quality of services, however, is not significantly different between the two sectors except in the one state with very lax licensing standards.

Quality is not significantly different between for-profit and nonprofit centers except in North Carolina, where for-profit centers provide much lower quality care. In addition, our econometric analysis indicates that there is no significant difference in variable costs per child hour (see footnote 4 for definition) between the two sectors, holding constant the number of hours of service, quality, wage rates paid, and size of facility. This means that the nonprofit sector is about as efficient in the use of resources as the for-profit sector.

Despite overall similarities, there are also differences. In nonprofit centers staff-to-child ratios in preschool rooms are higher than those in for-profit centers; teachers and teacher-directors have more specialized training and formal education; assistant teachers and teacher directors have more prior experience; staff have worked more months at the center; and annual turnover rates are lower. Nonprofit centers pay higher wages, and foregone wages of their staff are lower than those in for-profit centers. While these findings replicate those of earlier studies (Phillips & Howes, 1987; and Whitebook, Howes & Phillips, 1989) that nonprofit centers have higher structural quality measures and higher wages than for-profit centers, it is the first to find such limited differences between sectors with respect to process quality.

FINDING 11: Within each sector, particularly the nonprofit sector, there is variation by subsectors in center characteristics and quality.

To examine differences *within* each sector we divided the nonprofits into three subsectors: 1) independent nonprofit, 2) church-affiliated nonprofit, and 3) publicly operated nonprofit. We divided the for-profits into three subsectors: 1) independent for-profits, 2) local chains, and 3) national systems.

Within the for-profit sector, there is considerable homogeneity among the three subsectors with regard to staffing ratios and staff quality. In addition, the different subsectors do not significantly differ in their costs, revenues, and overall quality of services. National systems do, however, offer more staff benefits such as health insurance, maternity leave, and staff child care discounts, and they pay lower wages in California and Connecticut.

Nonprofits are less homogeneous; indeed, there are important differences among subsectors. Centers operated by public agencies have higher costs, revenues, and quality than other nonprofit centers. Church-affiliated centers have lower staff-to-child ratios, lower levels of trained and educated staff, lower wages, lower cost and revenues per child hour, and most importantly, lower overall quality than other nonprofits. These centers seem to resemble for-profit centers more closely than centers in the nonprofit sector. Indeed, the lower quality of church centers accounts for our finding that for-profit and nonprofit sectors do not differ significantly in quality.

These findings dispel the notion that quality (or lack thereof) is crisply aligned with a particular sector. To the contrary, these findings suggest that it is difficult to associate any given level of quality with a sector overall; rather, levels of quality may be more clearly aligned with subsectors.

THE ECONOMIC ENVIRONMENT:

A unique focus of this study was to learn more about the effects of market conditions on the cost and quality of care. Differences in demand and supply conditions faced by different kinds of centers (that is, for-profit and nonprofit sectors or subsectors) may affect the quality of care provided in the market.[5]

FINDING 12: Characteristics of the market setting for child care—notably, market competition and subsidy dependence—affect center finances. For-profit and nonprofit centers face different competitive conditions that can affect their performance.

This study provides evidence of strong competition in local markets. First, centers in for-profit and nonprofit sectors charge similar fees per child hour. Second, both sectors seem to minimize costs. Third, both sectors receive similar low rates of profit (surplus) on sales (3.7%).

Despite evidence of a high degree of competition between sectors, the composition of costs and the ability to take advantage of scale economies is different. For-profit centers spend a higher percentage of total costs on facilities and a smaller percent on labor, which could lower quality. These centers, however, typically serve a larger number of children and/or provide more hours of service than do nonprofit centers. That allows for-profit centers to operate at lower average cost per child and enables them to compete successfully with their nonprofit counterparts at a given level of quality. Nonprofit centers, many of which depend on donated facilities, may not have the option of increasing their size (enrollment).

FINDING 13: There is evidence of inadequate consumer knowledge, which creates market imperfections and reduces incentives for some centers to provide good-quality care.

This study suggests some reasons for the prevalence of low-quality child care, particularly for centers dependent on parent fees. In our parent survey, while parents say they value the characteristics of good-quality child care, they substantially overestimate the quality of services their children are receiving. Ninety percent of parents rate programs as very good, while the ratings of trained observers indicate that most of these same programs are providing care that ranges from poor to mediocre.

There are numerous possible explanations for this discrepancy between parent and observer ratings, some of which we investigated. For instance, there is evidence that parents are hindered in assessing care by the inherent difficulty of monitoring service. The disparity between scores given by parents and observers assessing quality is higher for aspects of care that are difficult for parents to observe. Also, parents' priorities seem to affect their assessments. The more they value an aspect of care, the greater the disparity between their evaluation and that of the trained observer. There may be other reasons why parents rate their child care arrangement highly. For instance they may not feel that they have a choice of care, or they may never have seen good-quality care, giving them no basis of comparison. The inability of parents to recognize good-quality care implies that they do not demand it. There is little difference in fees between poor-quality and high-quality centers, which lends credence to this hypothesis. Given both a competitive market that equalizes fees across centers and parents' difficulty in identifying center quality, centers dependent on parent revenues have no incentive to provide a higher level of quality at higher cost.

The findings do suggest that centers are providing the services parents demand so they can go to work. Preschool classrooms meet health and safety needs. Centers in the sample are open long hours, 10 to 12 hours per day. They provide part-time care, before-school and after-school programs, and summer camps. Parents, however, while they value good-quality services, apparently are not demanding quality. To the extent that government agencies involved in purchasing care for low-income children impose low payments for services or fail to provide higher reimbursement for higher quality, they too contribute to lowering the demand for good-quality child care.

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[5] It should be noted that this study was not designed to make a thorough comparison of the long-run advantages and disadvantages of a particular profit status. We did not collect data on capital invested in centers, nor did we investigate tax advantages and disadvantages of profit status.

Summary and Implications

We found that only 1 in 7 centers provides a level of child care quality that promotes healthy development and learning, and that quality of child care affects children across all levels of maternal education. These findings confirm earlier reports about the quality of child care available to the average family in the United States, presented in the National Child Care Staffing Study (Whitebook, Howes & Phillips, 1989) and the Study of Children in Family and Relative Care (Galinsky, Howes, Kontos & Shinn, 1994). Our results indicate that care for infants and toddlers may be even lower quality than previously thought.

This does not mean that good-quality care does not exist or that the early childhood profession does not know how to provide it. We know that high staff-to-child ratios, more highly educated staff, administrators with more experience, and staff stability together do much to create good-quality services.

This study provides evidence of market competitive characteristics and imperfections that we have reason to believe affect the cost and provision of quality. Efficient markets require that buyers have full information. Until parents and other purchasers of care can easily distinguish good from mediocre and poor-quality centers, and demand higher quality, centers cannot increase their fees to cover the increased costs of providing better care. Since most centers have limited budgets, they cannot afford to provide better quality, given the existing fee structure.

Other conditions affect quality of services. First, weak licensing standards seem to induce some for-profit centers and church-affiliated centers to provide lower quality services. Second, accredited centers have higher quality. Third, publicly operated centers, worksite centers, and centers that conform to higher standards in order to receive public funding have higher quality; those centers seem to have sizeable donations or cash contributions, which they use to raise quality. Fourth, larger centers, or centers that maintain full capacity, can reduce costs and increase revenue, thus permitting an increase in quality.

Lower quality centers pay lower wages. We also found that wages of women working in child care are low, even compared to women's wages that already are lower than men's wages. Foregone wages are lower in Connecticut, where quality is higher. They are also lower in publicly operated and worksite centers where quality is higher. There is every reason to believe that higher foregone wages reduce staff job satisfaction and increase turnover. In the nonprofit centers studied, longer staff tenure is related to higher quality.

Recommendations

In this nation, there is a strong commitment to meeting the first of our national education goals—that by the year 2000, children will enter school ready to learn. Yet despite this knowledge and intent, the reality of child care in the United States today makes it highly unlikely that we will reach that goal. Unless poor-quality child care is curtailed, the development and well-being of large numbers of our nation's children may be jeopardized. To that end, we make one critical recommendation:

> **The nation must commit to improving the quality of child care services and to ensuring that all children and their families have access to good programs. That is, GOOD-QUALITY child care must become a merit good in the United States.**

We predicate this recommendation on several assumptions:

- Child care participation will remain totally voluntary; that is, parents will have the right and responsibility to choose whether or not they use child care;
- Parents' right to choose child care will be preserved; that is, parents will have the right and responsibility to select the type of child care they wish;
- Child care will remain a mixed sector industry; that is, centers will continue to operate in the profit, nonprofit, and public sectors;
- As a merit good, a service we as a society want to provide for all children, the financing of quality child care will continue to be shared by responsible parties; that is, to the extent feasible, families will help pay for child care, as will responsible employers, philanthropic organizations, and the government.

To achieve this goal, we recommend four action steps.

ACTION STEP 1: ***Launch consumer and education efforts in the public and private sectors to help parents identify high-quality child care programs and to inform the American public of the liability of poor-quality programs.***

- Give parents clear information regarding the observable ingredients of good-quality child care.
- Give parents and others information that clearly identifies good-quality programs.
- Initiate a long-term public media campaign analogous to the one addressing the impact of smoking on health, to raise public awareness of the nature and importance of good-quality child care.
- In collaboration with other private and public agencies, initiate a federally supported program of research to increase understanding of the child care market and to provide an ongoing data base on the status of child care and the effects on children in the United States.

ACTION STEP 2: ***Implement higher standards for child care at the state level, as a major approach to eliminating poor-quality child care.***

- Create higher standards at the state level and improve monitoring of child care as a part of consumer protection. Standards must do more than protect the basic health and safety of children—they must also take into account children's developmental needs.
- Eliminate all exemptions from state licensing standards.

- Encourage centers to seek and maintain voluntary professional center accreditation based on high standards.
- Give state and federal financial incentives for centers to provide care that meets higher standards, eliminating federal regulations that restrict the ability of states to pay higher prices for higher quality care.

ACTION STEP 3: ***Increase investments in child care staff to assure a skilled and stable workforce.***

- Invest more federal, state, and local government funds and private sector funds in the education and training of child care teaching staff and administrators.
- Provide all child care staff compensation appropriate to their training, experience, and responsibility.

ACTION STEP 4: ***Assure adequate financing and support of child care.***

- Increase investment in child care by federal, state, and local government as well as the private sector, to help families pay the cost of good-quality care.
- Tie all federal and state child care funding to standards that demonstrably produce high-quality care.
- Provide financial incentives that enable centers to hire experienced administrators and skilled staff and to learn how to keep them.
- Tailor employee benefits to provide significant help to employees with young children, as part of the private sector's support of child care.

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Appendix 1: Study Methodology

This study examines the relationship between cost and quality of child care in centers, and the developmental outcomes of children enrolled in a subsample of the centers studied. The centers were located in four states—California, Colorado, Connecticut, and North Carolina—selected for their regional, demographic, and ECE program diversity.

Data were collected during the first half of 1993 on a stratified random sample of approximately 100 programs in each participating state, approximately evenly split between for-profit and nonprofit programs. The study included only state-licensed child care centers serving infants/toddlers and/or preschoolers that offered services at least 30 hours per week, 11 months per year. To be used in the sample, a program had to have been in operation at least one full fiscal year, and the majority of children had to attend at least 30 hours and five days per week. A total of 228 infant/toddler classrooms and 521 preschool classrooms were included.

The part of the study which addressed children's developmental outcomes included a subsample of observed preschool classes enrolling children eligible to enter kindergarten in fall 1994. A total of 826 children (approximately 200 per state) from 181 centers were included in this phase of the study. During the summer of 1993 individual assessments of the children were conducted at the centers by trained observers, and teachers and parents completed surveys.[8]

MEASURES AND PROCEDURES:

Through on-site interviews with center directors, data collectors obtained in-depth financial information such as center costs, revenue sources, and donation amounts. They also collected data on aspects of program characteristics, such as total attendance; enrollment and capacity; number of infants, toddlers, preschoolers, and school-aged children; number of publicly subsidized children; operating hours; ownership status; fee schedules; and source of payment. Finally, directors provided information on the education, training, demographic characteristics, and wages of each staff person working directly with children.

Staff persons in the sampled rooms completed questionnaires regarding their family and work experience. Center directors and lead teachers in each sampled room completed questionnaires on administrative leadership in the center. Parents in the sampled rooms were asked to complete a questionnaire about how they valued aspects of child care that professionals associate with child care quality, and about their assessment of quality in their children's classrooms.

Two well-established global measures were used to assess comprehensively the day-to-day quality of care provided for children: *The Early Childhood Environment Rating Scale* (Harms & Clifford, 1980) and its infant/toddler version, *The Infant/Toddler Environment Rating Scale* (Harms, Cryer & Clifford, 1990). In addition, two instruments designed specifically to measure teacher involvement and style were used, *The Caregiver Interaction Scale* (Arnett, 1989) and *The Teacher Involvement Scale* (Howes & Stewart, 1987). For each center, results of these observations for the two classrooms were combined into an overall quality index number for each center. The center quality index is a weighted average of the scores of the two rooms in the center, weighted by the percent of children in the center who were in the given age-group. Five times during the day, classroom observations of staff-to-child ratios and group size were made.

Data collected for the developmental outcomes component included individual child assessments, teacher ratings, and parent surveys. Each child was seen individually at the center for about 30 minutes to administer the following assessment instruments. Receptive language ability was measured using the *Peabody Picture Vocabulary Test-Revised* (Dunn & Dunn, 1981). The *Woodcock-Johnson Tests of Achievement-Revised* (Woodcock & Johnson, 1989; 1990) were used to examine pre-reading skills and pre-math skills. Children's attitudes toward child care and perceptions of competence were measured using the *Attitudes/Perceptions of*

[8] These children were assessed again during the spring of 1994, and will be assessed at the end of their kindergarten year in May 1995 in the longitudinal continuation of this study.

Competence Scale (Stipek, 1993). The children's teachers completed ratings of children's social skills using the *Classroom Behavior Inventory* (Schaefer & Edgerton, 1976). They rated the teacher-child relationship using the *Student-Teacher Relationship Scale* (Pianta, 1992; Pianta & Steinberg, 1992). Finally, parents completed demographic surveys.

All measures were studied descriptively to determine whether there were reliable differences related to region, auspice, or three measures of program scope: the proportion of center full-time-equivalent children who were subsidized, the proportion who were infants/toddlers, and whether the center offered a before-school and after-school program.

The econometric analysis involved estimating short-run total cost functions and quality production functions. We employed multiproduct translog cost functions where the services provided for infants-toddlers, preschoolers, and school-aged children are distinguished. Quality of the child care is controlled by the quality index described above. A vector of dummy variables, representing center attributes, is included to capture efficiency differentials due to center characteristics.

The quality production function is estimated using ordinary least squares, where the center quality index is explained by standard structural inputs (e.g., staff-child ratio, staff education, and experience) and the composition of programs offered by the center, as well as variables capturing center-specific idiosyncracies, such as an administrator's involvement in the center's organization and curriculum. The model also includes controls for the financial, regulatory, and institutional constraints surrounding the center's operation.

A psychometric analysis of correlates of quality was also performed using hierarchical regressions in which process quality was regressed onto 7 sets or "chunks" of structural variables. Seven sets of regression models were fit to the data. The first included the first set of variables, state and profit status. The second included the first two sets of variables—state, profit, and the teacher's background variables. Each successive regression involved adding another chunk of variables to the model.

A third analysis was performed, a discriminant analysis to identify the factors that are most able to classify centers offering poor, mediocre, or developmentally appropriate care.

Hierarchical linear regression models were used to test the concurrent relationship between children's developmental outcomes and the quality of their child care. The initial model for each outcomes variable included all main effects and two-way interactions to determine whether child and family functions, center sector, or geographic location mitigated the association between developmental outcomes and quality. Non-significant interaction terms were omitted one at a time until the model included all main effects, the state by sector interaction (which constituted the sampling frame) and all other significant two-way interactions.

Appendix 2: Cost & Quality Findings for All Centers by Profit Status

	Mean Values		
Variable	**Non-Profit** N=200	**For Profit** N=201	**All** N=401
Center Structure:		**Spring 1993**	
Total FTE Children Enrolled	60	76	68
Percent of Centers Accredited	7	8	8
Percent of Infants & Toddlers	18	25	22
Percent of Centers with Before and After Care for School-Age	47	72	59
Annual Percent Center Turnover for Teachers	31	46	39
Annual Percent Center Turnover for Administrative Directors	13	18	15
Percent of Children Subsidized	34	13	23
Center Quality:		**Spring 1993**	
Weighted Process Index, Scaled to ECERS	4.16	3.87	4.02
ECERS Total Quality Score	4.39	4.05	4.22
ITERS Total Quality Score	3.55	3.35	3.42
Midmorning Teacher to Child Ratios for Infants and Toddlers	0.31	0.26	0.28
Mid-Morning Teacher to Child Ratios for Preschoolers	0.19	0.14	0.16
Percent of Teachers with College Education or More	39	33	36
Months of Tenure for Teachers	53	36	43
Cost:		**Fiscal Year 1992**	
Hourly Wage for Teachers	$ 7.83	$ 6.62	$ 7.22
Hourly Wage for Assistant Teachers	5.97	5.43	5.70
Hourly Wage for Administrative Directors	12.22	9.89	11.33
Labor Cost per Child Hour	1.75	1.24	1.49
Facilities Cost per Child Hour	0.16	0.40	0.28
Total Cost per Child Hour	2.22	2.00	2.11
Foregone Wages per Child Hour	0.53	0.55	0.54
Total In-Kind Gifts per Child Hour	0.31	0.09	0.20
Full Cost (Total Cost + In-Kind Gifts + Foregone Wages)	3.03	2.63	2.83
Revenue & Fees:		**Fiscal Year 1992**	
Revenue from Parent Fees per Child Hour	$ 1.27	$ 1.85	$ 1.56
Revenue from Public Fee Payments per Child Hour	0.48	0.20	0.34
Total Revenue per Child Hour	2.28	2.10	2.19
Surplus or Deficit per Child Hour	0.06	0.09	0.08
Hourly Cost to Parents Net of Tax Credit*	1.10	1.62	1.36
Full-time Monthly Infant Fee Charged by Centers	434.78	461.53	450.80
Full-time Monthly Preschool Fee Charged by Centers	358.18	384.29	371.50
Preschool Hourly Fee (Monthly Fee/Hours of Care)	2.01	2.05	2.03

Note: Elements may not add to totals due to rounding.

* Equals full tuition discounted by subsidized children and federal income tax credit.

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